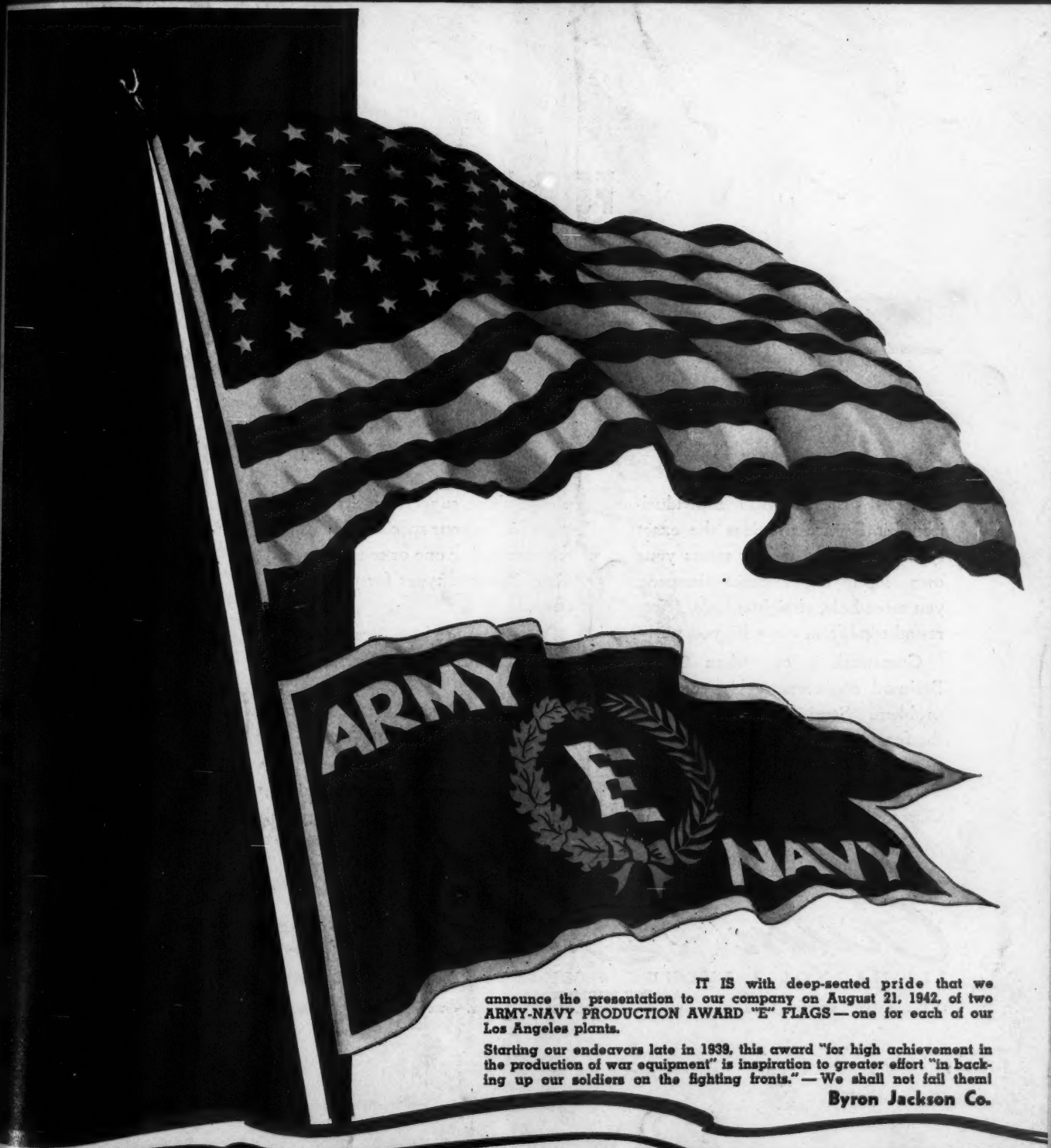
CALIFORNIA

OIL WORLD

and Petroleum Industry

Vol. 35
No. 19
Whole
No. 1618

FIRST ISSUE OCTOBER, 1942 • FOUNDED 1908



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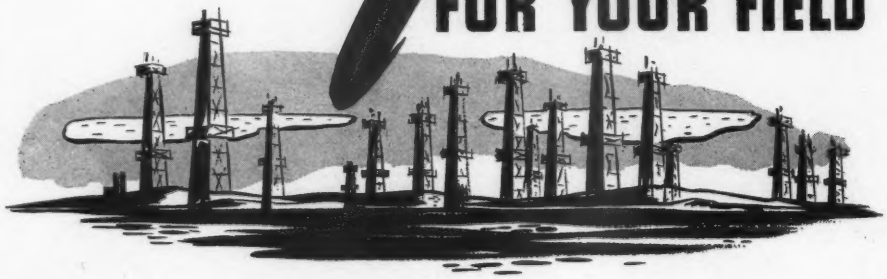

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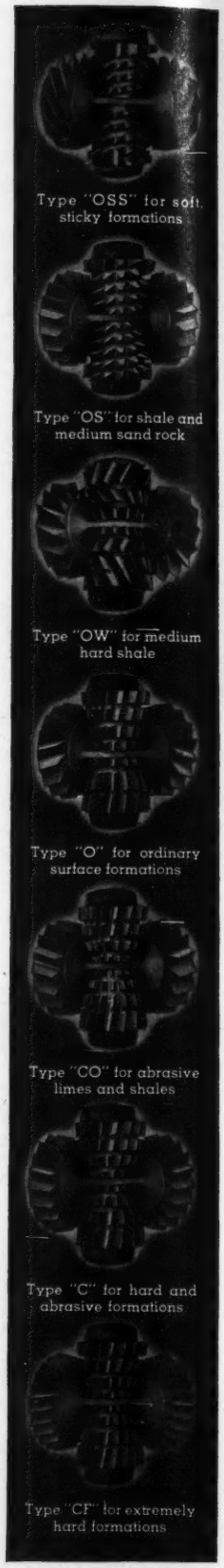
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OIL WORLD
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PUBLISHED TWICE A MONTH — ENGINEERING — TECHNOLOGY — LATEST NEWS

FIRST ISSUE
OCTOBER 1942
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IN THIS ISSUE

In the service of our country

Administrative Highlights..... 5

Correlation Between Electrical Logs and Radioactivity Logs..... 9

New Direct Current Drilling Equipment in Deep Well Service.....15

Los Angeles Basin Developments.....18

Coastal District Developments.....20

San Joaquin Valley Developments.....22

PETROLEUM PUBLISHERS, INC. 939 SO. BROADWAY BLDG.
LOS ANGELES, CALIFORNIA-MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

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California Oil World and Petroleum Industry is published twice a month at 1009 in the 939 So. Broadway Bldg., Los Angeles, California. Entered as Second-class Matter January 16, 1937, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price $1 per year in U. S. and Possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

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Administrative Highlights •

"It is not logical to criticize operators who were properly prepared for pre-war conditions, but who are incurring (gas) waste at this time on account of greatly increased production rates which their existing facilities are unable to handle. Such conditions, however, should be corrected as soon as possible by additions to facilities and by changing operating practices."

Thus, in a paragraph, the Gas Conservation Subcommittee of the Production Committee for District No. 5 sums up its opinion about the natural gas situation in the state, as part of its report and recommendations to the Production Committee following a study of the existing conditions at Santa Maria Valley, Coalinga Eocene, and Wilmington.

The subcommittee was formed after the office of Petroleum Coordinator had advised the Production Committee, in its letter of approval of the July allocation schedules, that:

" . . . it is again reiterated that the venting of natural gas to the atmosphere cannot be tolerated for any reason in view of prospective demand for such gas of war industries and essential services during the forthcoming winter. Any oil allotment whatsoever is hereby expressly denied to any well if the production of the quota . . . would . . . cause the venting either directly or indirectly of any natural gas into the atmosphere."

Enforcement of this directive has been held in abeyance pending the study and recommendations of the Gas Conservation Subcommittee, as the Production Committee pointed out that literal interpretation of the order would result in wholesale shutdowns of producing wells particularly in the Santa Maria Valley and Wilmington fields.

The subcommittee's study of gas conditions will include all fields in the state, but since the Coalinga Eocene, Wilmington, and Santa Maria areas appear to be most critical, they have been covered by a preliminary report, which recommends:

I. Coalinga Eocene Pools

1. That the purchasing companies be requested to accept temporarily and pending the construction of a sulfide removal plant, all gas which they can handle.

2. That the operators immediately arrange for the construction of a sulfur removal plant.

3. That a request be made that the capacity of the existing compressor and gasoline plant be increased.

4. That the operators, where practicable, arrange to deliver temporarily their high pressure separator gas direct to the purchasing companies' lines.

5. That the operators be requested to produce at uniform daily rates (their allowable) so as to avoid fluctuations in gas production.

6. That high ratio wells be shut in or the ratios controlled where it is feasible to do so.

II. Wilmington

1. That the operators proceed at once to collect, from wells, all gas which can be conserved without ultimate financial loss.

2. That gasoline and compressor plant facilities be made adequate to handle the present gas production and allow same tolerance for increased production rates.

III. Santa Maria Valley

1. That a gasoline and compressor plant together with gathering and transmission facilities, adequate to handle the gas production, be installed as soon as practicable.

2. That an attempt be made to induce the operators of the three oil refineries, in the field, to change over from oil fuel to wet gas fuel.

3. That the operators proceed immediately to effect a reduction in gas blow by proper control of high gas-oil ratio wells.

4. That no Ventura gas, which can be replaced by unconserved gas from the Santa Maria area, be introduced into the Santa Barbara-Santa Maria system.

5. That compressor capacity be provided at Orcutt and Goleta so that excess gas can be delivered to the Ventura line.

If these recommendations are to be put into effect, necessary material must be released if it is on hand, or made available if not. In this connection, the subcommittee report says:

"The Committee believes that it is essential to the war effort and to the public interest to maintain adequate facilities at all times for the production and handling of such amounts of crude oil, natural gas, and other products as will satisfactorily meet the essential demands. It is obvious that as demand increases and older fields decline in production the deficiency must be made up from the flush fields where adequate reserves are available. It is desirable that this transition be made with the minimum of waste, but it would seem logical that waste incident to the maintenance of a satisfactory and sufficient production of crude oil should be tolerated within reasonable limits, pending the construction of facilities and the adjustment of practices in such a manner as to eliminate or minimize such waste.

"We further believe that adequate facilities to produce and handle such amounts of oil, gas and other products as may be required to properly supply the essential demands should

be installed at once, and that if materials are not available for such projects they should be made available immediately. We are presently in a position where many of our most desirable and potential sources of supply are at their maximum rates of production, not due to inability to produce, but due to inadequate handling facilities. This situation should be corrected at once, if we are to be in a position to supply the constantly mounting demand . . . Furthermore, the sooner it is accomplished, the greater will be the saving, and the more certainty there will be that requirements will be met."

Allotments to both Wilmington and Santa Maria have been limited by gas utilization capacity for the past several months, and it has not been possible to increase this capacity because of restrictions in the use and purchase of materials in the regulations in Conservation Order M-68.

Members of the Gas Conservation Subcommittee are: L. A. Cranson, Honolulu Oil Corp., chairman; A. F. Bridge, Southern Counties Gas Co.; F. F. Doyle, Pacific Gas and Electric Co.; R. W. Garman, and E. G. Trostel, District No. 5 O.P.C.; Wm. Keck, Jr., Superior Oil Co.; E. H. McCollough, Amerada Petroleum Corp.; H. C. Pyle, Union Oil Co.

Demand In Slight Drop

A 20,000-barrel daily drop in total gasoline demand, and a 5,000-barrel per day increase in demand for fuel oil, with changes in other products making a drop of 3,000 barrels per day in total demand, marked the statistics of the California industry during August as compared with July, according to the "Petroleum Situation in the Pacific Coast Territory," published monthly by the U. S. Bureau of Mines.

Total August demand was 787,000 barrels per day, compared with 790,000 daily in July. Of the August total, 236,000 barrels per day was for gasoline, compared with 256,000 in July; 355,000 daily was for fuel oil, compared with 350,000 in July; 62,000 daily was for gas and Diesel oil, the same as for July; and 134,000 daily was for all other products, compared with 122,000 in July.

For the first eight months of the year, January-August, inclusive, total demand averaged 748,000 barrels per day, compared with 705,000 daily during the like period of 1941, a 1942 increase of 43,000 barrels daily. By products, the eight-month demand figures are: for gasoline, 230,000 daily in 1942, compared with 238,000 in 1941; for fuel oil, 345,000 daily in 1942, compared with 282,000 per day in 1941; for gas oil and Diesel oil, 67,000 daily in 1942, compared with 72,000 daily in 1941; for all others, 106,000 per day in 1942, compared with 113,000 daily in 1941.

Thus it is seen that the increase in total demand for the first eight months of the current year, 43,000 barrels per day, is due entirely to the increase in demand for heavy products, residual fuel oil alone increasing 63,000 barrels per day while all other products decreased 20,000 barrels per day.

Production of crude during August averaged 725,000 barrels per day, compared with 687,000 daily during July. For the eight-month period, production was 651,000 daily, compared with 624,000 daily during the like period of 1941.

Net gasoline production was 252,000 daily in August, compared with 213,000 in July, and for the eight-month period was 226,000 daily compared with 231,000 in 1941. This decrease of 5,000 barrels per day in gasoline production, in the face of an increase of 27,000 barrels daily in crude production, indicates the degree to which the industry has thus far readjusted its refining and producing operations to reduce the manufacture of gasoline and increase manufacture of fuel oil.

Fuel oil production was 276,000 barrels per day during August, compared with 258,000 daily in July, and for the eight-month period was 238,000 daily compared with 226,000 daily in the like period of 1941.

Gas oil and Diesel oil production in August was 86,000 daily, compared with 94,000 in July. For the eight months, production of this product was 82,000 barrels per day compared with 90,000 in 1941.

Stock changes were: 24,000-barrel decrease in crude, from 47,096,000 to 47,072,000; 355,000-barrel increase in gasoline, from 19,011,000 to 19,366,000; 707,000-barrel decrease in fuel, from 43,997,000 to 43,290,000; 257,000-barrel increase in gas oil and Diesel oil, from 12,446,000 to 12,703,000. Total of all stocks decreased 276,000 barrels, from 131,316,000 barrels on July 31 to 131,040,000 barrels on August 31.

Equipment Data Sought

Data on returned questionnaires, in the survey of pumping equipment being carried on by the Conservation Committee of California Oil Producers, are being assimilated, it was reported at the September meeting of the Conservation Committee, preparatory to submitting data to Washington in substantiation of a proposed amendment to Conservation Order M-68.

Operators who had not returned their questionnaires were urged by R. P. Huggins, chairman of the Conservation Committee, to do so at their earliest opportunity, so that full data could be submitted to Washington. Mr. Huggins also remarked that many operators had stated that they would be unable to rehabilitate old wells under present economic conditions, but that they had failed to state the amount of oil they could produce if such conditions improved, and requested that an estimate of possible production be included hereafter.

October Schedule Outlined

L. L. Aubert, vice-chairman of the Production Committee for District No. 5, reviewed the procedure and outstanding features of the allocation schedule for October, which has been approved, as submitted, by the OPC in Washington. The the OPC in Washington. The schedule allocates 733,500 barrels per ed for new wells, making a total of 738,000 barrels daily.

He explained the apparent drop of 12,000 barrels from the preliminary September figure of 750,000

barrels daily as being mandatory under the refusal of the Office of Petroleum Coordinator to approve schedules in which certain fields producing heavy crude were allocated their capacities where such capacities were above maximum efficient rates.

Calculated total maximum efficient rate of restricted pools for the month was fixed at 508,139 barrels per day, with estimated total production from unrestricted pools at 334,285 barrels per day. The total available production of these two groups, 842,424 barrels daily, is only 108,924 barrels per day more than the allotment of 733,500 daily, which indicates the degree of restriction now being placed upon the state's production. It should be pointed out however, that the 842,424-barrel figure does not indicate the state's capacity to produce, since it is based upon maximum efficient rates which are less than capacity figures in the case of all but stripper and near-stripper fields.

Decline Rates Studied

A preliminary study of decline rates in unrestricted pools has been made by the Oil Administrator's office. This study indicates an average normal 10.1 percent per year or decline of .88 percent per month for 160 unrestricted pools during 1941, while the average decline from the middle of August to the middle of September, 1942, for 151 of these pools (nine pools which showed increases in production because of additional wells were omitted) was 1.9 percent.

The Oil Administrator's memorandum points out, however, that substantially "all of this surplus decline can be accounted for in specific pools, which would indicate that at present the normal decline rate for all of the 160 pools should level off to the .88 percent or 3,000 B/D per month, and 10.1 percent or 34,000 B/D over a 12-month period."

The memorandum further points out that:

"We consider that the 1941 decline rates established from production curve trends are more representative of normal future expectation than is the change for the one month of September. The latter may be the result of abnormal fluctuation due to one of several conditions, including (a) wells taken off production, (b) wells placed back on production, and (c) wells dropping off from production peaks at unrestricted rates, resulting from the previous period of curtailed production. This abnormal decline, or settling of the post-curtailment flush, is still being observed in several pools.

"It should be realized that most of these pools have not been producing at capacity rates for sufficient time to estabish the decline trend."

Part of the apparent decline is due to corrections in previous estimates of producing capacity of unrestricted pools. Continued production of these pools at capacity rates, which will be recorded by the Oil Administrator's office, will more accurately define the normal decline trend.

Public Lands

Parallel action is being taken by two departments of the government looking toward the prevention of drainage of the Elk Hills Naval Reserve.

According to a Washington report, the Navy Department is negotiating with the Standard Oil Co. of California regarding production and development of the company's properties in the field, which are checkerboarded among government holdings; and Senator Hatch has introduced, at Secretary of the Interior Ickes' request, a bill to provide for termination of leases either within, or within one mile, of the known geologic structure.

The Hatch bill, Senate 2787, provides that "any lease which has been issued under the act of February 25, 1940 (41 Stat. 437; 30 U. S. C. 181), or any amendment thereof, embracing lands within the known geologic structure of the Elk Hills, California, producing oil and gas field but outside the limits of Naval Petroleum Reserve Numbered 1, (Elk Hills), shall terminate, as to lands so situated at the expiration of its current term, including any extension heretofore accrued or which may accrue pursuant to the Act of February 9, 1933 (47 Stat. 798; 30 U.S.C. 209), if prior to such expiration date it shall have been determined by the Secretary of the Interior that Naval Petroleum Reserve Numbered 1 is being drained or is susceptible of being drained by wells drilled within the boundaries of such lease. Where the limits of the structure cannot be reasonably determined, no lease shall be renewed for any legal subdivision, any part of which is within one mile of Naval Petroleum Reserve Numbered 1."

Effect of the Navy policy, if put into effect, would be to prevent drainage from the reserve by wells on the structure, and effect of the Hatch bill, if passed, will be to prevent drainage from adjoining leases outside the reserve itself but on, or within one mile of, the structure.

Also affecting holders of public lands leases, another bill which gives the present holder of a non-competitive lease a preferential right to a new lease upon expiration of the present lease, provided he files an application for the new lease within 90 days of the expiration of the present lease has been signed by the president.

The law also authorizes the Secretary of the Interior to compromise any claim for accrued rental, "in any case in which he determined that it would be financially beneficial to the United States . . . or in any case in which he determines that the collection of the full amount . . . is inadvisable because of the lessee's financial resources being limited."

ODT Controls Trucks

All commercial vehicles, regardless of type, will be required to have a Certificate of War Necessity, issued by the Office of Defense Transportation, on and after November 15. This certificate, without which gasoline, parts, tires, or tubes cannot be delivered to the vehicle, will effectuate the conservation of vehicles themselves, as well as rubber, which the ODT deems to be necessary in the war effort.

According to the ODT, the new

program does not constitute gasoline rationing. Its objective, the ODT said, is to assure the continuance of commercial transporation by avoiding waste of critical equipment and facilities, "which under pressing war conditions are difficult of replacement."

Certificates, which will not be transferable, will specify:

The name and address of the person to whom it is issued.

The vehicle or vehicles covered.

The purpose for which and the conditions under which the vehicle or vehicles may be operated.

Such other terms and conditions as the ODT may from time to time direct.

A certificate issued for a single motor vehicle must be carried on the vehicle at all times, when a certificate is issued for a fleet of vehicles (three or more), a fleet unit certificate must be carried on each vehicle.

The order provides that the tires of every certificated vehicle must be checked at an inspection agency designated by the Office of Price Administration every 5000 miles or at the end of each 60-day period, whichever occurs first.

The order prohibits the continued use of any vehicle thus inspected unless all reasonable adjustments, repairs, or replacements "necessary to conserve and providently utilize" the vehicle's tires have been made, or unless the operator is unable, under rationing regulations, to make such repairs.

Applications for certificates should not be sent to Washington. An ODT release states that application blanks, together with complete instructions on how to fill them out, will be mailed to every person registered on December 31, 1941, as the owner of a commercial vehicle. Accompanying the application will be a copy of General Order ODT No. 21, setting up the Certificate of War Necessity program; a statement by Joseph B. Eastman, Director of the ODT; a summary of all other orders pertaining to the program, and a copy of a press release explaining the new order.

As mailing of the blanks is completed in a particular area, announcement of the fact will be issued to the newspapers. Anyone affected by the order who has not at that time received a blank will be required to apply to the nearest ODT field office, of which there will be 142, their addresses to be announced later, according to the ODT.

One feature of the order, which is tantamount to Federalization of all trucks, is that the ODT may cause any vehicle for which a certificate has been issued "to be operated in such manner, for such purpose, and between such points as the Office of Defense Transportation shall from time to time direct" regardless of "any contract, lease, or other commitment, express or implied, with respect to the operation of such commercial motor vehicle."

Truck Pools Asked

ODT Director Eastman has also asked for "joint action" by tank truck operators to reduce mileage and eliminate cross-hauling, special deliveries, and call-backs.

"The absolute need for the elimination of every unnecessary mile and the conservation of the available supply of rubber and tank vehicles, engaged in the retail delivery of petroleum products, requires that immediate action be taken by the operators of tank trucks to develop cooperative plans to provide for the necessary joint action which will have the effect of securing the objectives of the certificates of war necessity which will be issued under General Order ODT No. 21," Eastman said.

Eastman asked oil transport advisory committees in all states to meet with all operators of tank trucks and local deliveries to "develop concrete plans which will bring about these objectives."

Tank Car Priorities

ODT is also setting up a priorities system for tank car shipments, under a finding by the WPB that such priority control is a war necessity.

Priority ratings are:

Class A: Any material for the armed forces and lend-lease shipments.

Class B: A list of approximately 400 commodities, including special petroleum products and chemicals.

Class C: Transportation of petroleum and products into District 1 (the east coast) and Oregon and Washington. The Office of Petroleum Coordinator, however, allocates the quantities of such shipments.

Class D: All products, except gasoline, within District 1 and into or within all other districts except Oregon and Washington, quantities to be allocated by O P C.

Class E: Shipments of gasoline into and within all districts, quantities to be determined by OPC.

Gas Prices Fixed

Maximum prices for wet and dry gas, heretofore set by the General Maximum Price Regulation, have been brought under Price Schedule No. 88, petroleum and petroleum products, by Amendment 32 to No. 88.

Ceiling prices for wet and dry gas are to be determined as follows:

Wet gas from any given field: the highest price that could be determined under a contract in effect between seller and purchaser on May 1, 1942.

If no contract was in effect between seller and purchaser, the ceiling shall be the highest price that could be charged at May 1, 1942, under terms of any contract in effect on that date between the seller and a "purchaser of the same class for the sale of wet gas produced from such field."

If neither of the above is applicable, or if the purchaser wishes to extract some new product from the gas, a tentative price may be set, subject to OPA Washington approval. Application for approval must be submitted within 15 days after price is agreed upon or 30 days after October 7, 1942, whichever is later, and must set forth the inapplicability of other price determining procedure, the tentative price and method of arriving at it, maximum prices prevailing in the two

(Continued on Page 13)

Correlation Between Electrical Logs and Radioactivity Logs

By A. B. WINTER
IN COLLABORATION WITH M. C. BOWSKY AND J. C. STICK, JR.

There are now two types of curves being recorded in Radioactivity Logging. One is the Gamma Ray Curve which is a measure of the natural gamma-ray intensity of the formations; the other is the Neutron Curve which measures the intensity of the gamma rays resulting from the bombardment of the formations with a strong source of neutrons. The Gamma Ray Curve has been in commercial use for over two years and has proved very successful in the location of productive horizons behind casing. This curve is always recorded in Radioactivity Logging. The Neutron Curve is a new development which appears to have considerable value as a companion curve to the Gamma Ray Curve in certain areas. The Neutron Curve is recorded when conditions make its complementary use advisable for more precise interpretation.

When working with Radioactivity Logs it is frequently necessary to correlate the Radioactivity Log with an electrical log of a nearby well. The correlation of the two types of logs is usually over a short distance, but the methods employed are the same when the correlation is over a greater distance. Occasionally it is desired to check the depth measurements of an electrical log by means of the Radioactivity Log. It is the purpose here to present several illustrations of comparison of the two types of logs made in the same well and to point out some of the characteristic features of Radioactivity Logging that should be considered when correlating with electrical logs.

In general, the methods used in correlating Radioactivity Curves with the electrical logs are the same as used in correlating other types of logs. Depending largely upon the purpose of the correlation, the procedure employed may vary. In studying structural problems, the usual procedure is to align the logs, using sea level as a datum plane. However, if the problem is to trace groups of formations such as a sand series, the logs may be lined up so that the sands in the group or series are level. The identification of each sand in the series may then be more readily established.

Before attempting to correlate a Gamma Ray Curve with an electrical log it is necessary to understand the characteristic responses of the Gamma Ray Curve of the particular area so as to account for any variations from the normal curve responses. In many areas the response of the Gamma Ray Curve is quite similar to the Natural Potential Curve of the electrical log and in some cases the two types of curves may be nearly identical. Figure 1 is a comparison of an electrical log and a Gamma Ray Curve of the same well in the University field of East Baton Rouge Parish, Louisiana. Note the very close agreement between the Natural Potential Curve and the Gamma Ray Curve. It will be observed that the large sand bodies are very nearly identical. Some of the thin shale lenses do not show on the Gamma Ray Curve due to the limitations imposed by the length of the ionization chamber which tends to average the gamma-ray intensity of a three-foot zone. An example of this averaging effect is illustrated by the Gamma Ray Curve in the sand zone at 6300 feet.

Results to date have indicated that throughout Southeastern Louisiana the response of the Gamma Ray Curve is quite similar to the response of the Natural Potential Curve. There appears to be a more or less true shale line on the Gamma Ray Curve. This condition does not hold true throughout all the fields in the Gulf Coast. In fields such as the Refugio area where ashy or volcanic zones are present, it has been noticed that a definite shift of the Gamma Ray Curve to the right occurs opposite the ashy sections. This displacement causes the sands in the ashy sections to appear to have a higher intensity value than the normal shales above or below the ashy section. If compensation is allowed for the shift of the shale line due to the presence of the ashy material, the logs may be readily correlated with the Natural Potential Curve of the electrical logs. It has been discovered in this area that the shift of the curve due to the volcanic or ashy sections is very helpful in making long distance correlations.

Experience to date has indicated that as a general rule in the Gulf Coast fields the Neutron Curve is quite similar to the Shallow Penetration Resistivity Curve of the electrical log.

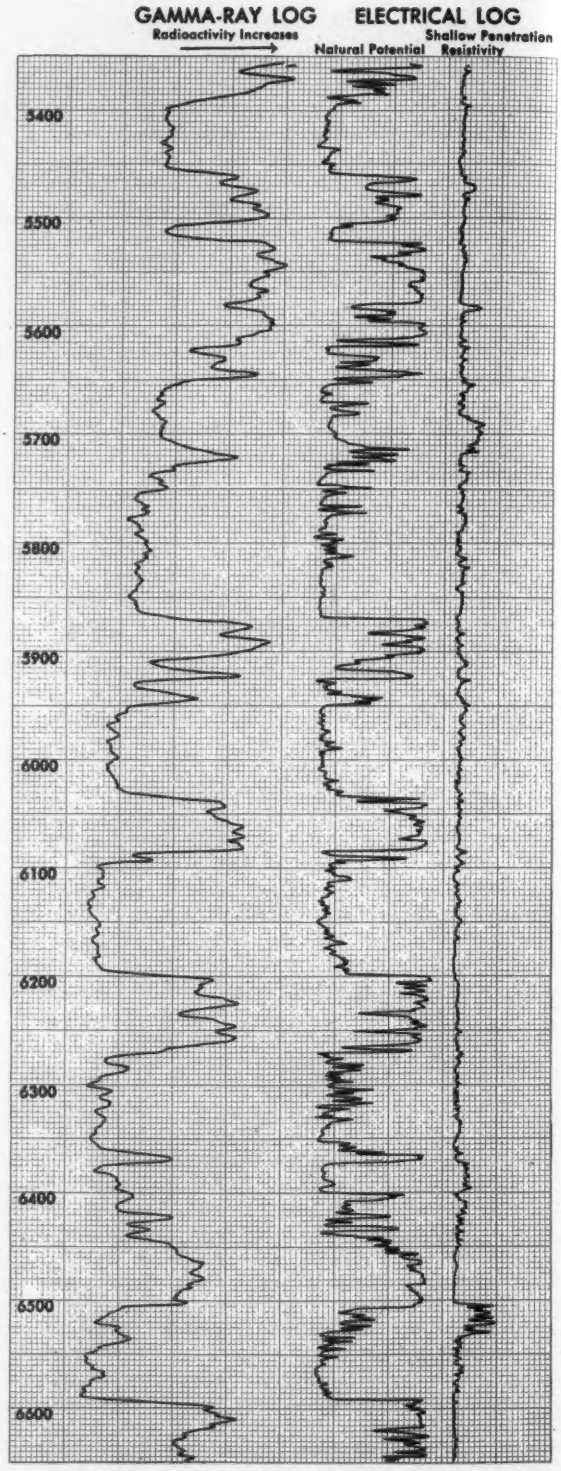
In the Mid-Continent area another problem is involved in the interpretations of Gamma Ray Curves. Due to the fact that the response of the sands and limestones are quite similar, when a knowledge of the stratigraphy is lacking it has not been possible to distinguish between a sand and a limestone solely from the Gamma Ray Curve response. Before attempting to identify a sand series or group of formations, in cases where both sands and limestones are present, it is first necessary to interpret the log using all available information—such as sample logs, driller's logs, etc. As soon as the marker formations are identified, the logs may then be readily correlated with other logs to solve such problems of structure as changes in intervals, thickening and thinning of key formations or identification of formation groups.

THE PROBLEM OF ATTEMPTING TO DISTINGUISH BETWEEN SANDS AND LIMESTONES

Since limestones may not always have distinct response on the Natural Potential Curve of the electrical log but must be distinguished by the characteristic response of the Shallow Penetration Resistivity Curve, it is necessary to consider both the Natural Potential Curve and the Shallow Penetration Resistivity Curve when correlating with the Gamma Ray Curve. An example of this is illustrated in Figure 2, which gives a comparison between an electrical log and a Gamma Ray Curve of the same well in which both limestone beds and sands are present. For purposes of comparison the Gamma Ray Curve (broken line) has been superimposed on the Natural Potential Curve. Note that the response of the Gamma Ray Curve is nearly identical to the Natural Potential Curve through the sand and shale zones but that a disagreement occurs opposite the dense limestones. However, the dense limestones shown by the Shallow Penetration Resistivity Curve appear almost as "reflections" on the Gamma Ray Curve.

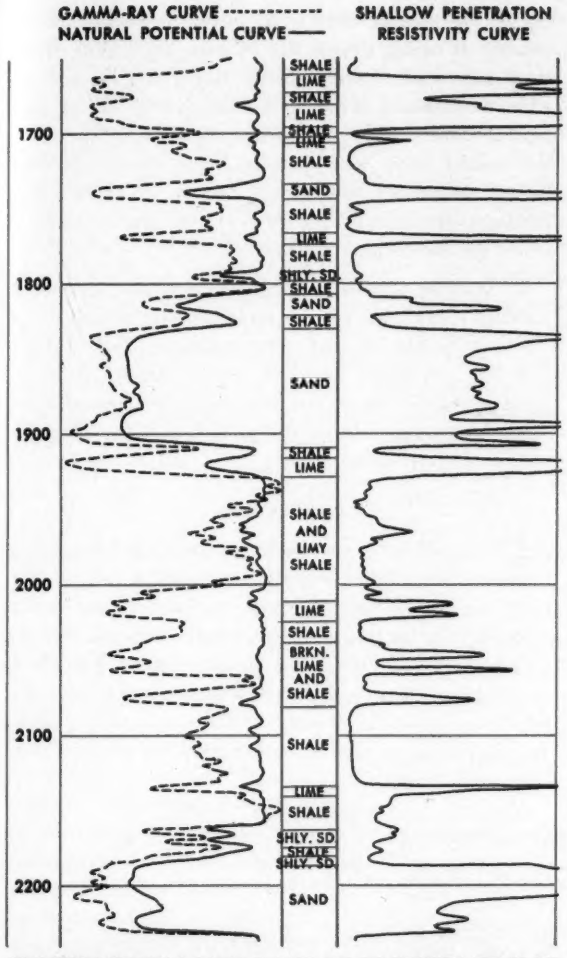
Figure 2 further illustrates the problem of attempting to distinguish between sands and limestones solely from a Gamma Ray Curve. It will be observed that the relative intensities of a sand and limestone are very nearly the same. Cases have been encountered where the observed Gamma-Ray intensity of the limestones seemed to be consistently greater than the intensities of the sandstones. On the other hand the converse has been observed. To date, no definite difference has been found to hold consistent for the relative intensities of sands and limestones in the Mid-Continent area and caution must be exercised in correlating the Gamma Ray Curves with electrical logs to identify the limestones first in order to avoid error. A very distinct difference between a sandstone and a dense limestone has been observed on the Neutron Curve. This difference is indicated by the higher intensity throws produced by the dense limestone on the Neutron Curve. The combination of the Neutron-Gamma Ray Curves permits the identification of the dense limestone beds. Similar to the results in the Gulf Coast the response of the Neutron Curve in the Mid-Continent area appears quite similar to the Shallow Penetration Resistivity Curve of the electrical log.

Another type of formation which shows a radically different response on the Gamma Ray Curve of the Radioactivity Log than on the Natural Potential Curve of the electrical log is the carbonaceous shales such as the Woodford shale in Oklahoma. Since the gamma-ray intensity of this type of shale is of considerably greater magnitude than ordinary shale, the characteristic response on the Gamma Ray Curve is very definite. Figure 3 is a comparison of Electrolog Curves and a Gamma Ray Curve of the same well in Seminole County, Oklahoma, which illustrates the very high Gamma-Ray intensity of the Woodford shale compared to the normal shale value such as the Sylvan shale.



COMPARISON BETWEEN A GAMMA-RAY LOG AND AN ELECTRICAL LOG OF THE SAME WELL IN THE UNIVERSITY FIELD, EAST BATON ROUGE PARISH, LOUISIANA. (Courtesy of Mr. Ed. Jones, Sugarfield Oil Co.)

Figure 1



COMPARISON BETWEEN A GAMMA-RAY LOG AND THE ELECTRICAL LOG OF THE SAME WELL IN THE ILLINOIS BASIN.

Figure 2

A condition which must also be considered in correlation of a Gamma Ray Curve with an electrical log in some areas is the difference often occurring in the Natural Potential Curve opposite fresh water sands compared to oil or salt water sands. Although, under certain conditions, the response for a fresh water sand on the Natural Potential Curve may be reversed or may be quite similar to the shale response, yet a fresh water sand will appear on the Gamma Ray Curve similar to the response for either a salt water sand or oil sand. Usually it is necessary to use the Shallow Penetration Resistivity Curve for correlation through the fresh water zones.

Experience in many fields in Oklahoma indicates that the Gamma Ray Curve generally has a fairly uniform shale line similar to the average shale line of the electrical log Natural Potential Curve. In certain fields, however, it has been found that the shales in certain groups of formations appear to shift as a group from the average shale intensity of the remainder of the log. When attempting to correlate with nearby electrical logs, compensation must be allowed for the shifting of the shale line. It has also been observed in the Oklahoma City field that certain local irregularities occur in the response of the Gamma Ray Curve that would confuse the correlation if they were not recognized as such and allowance made for them. Some of these irregularities do not correlate between wells. Another factor often overlooked in correlation of the two types of logs is the apparent departure from normal response which may occur on an electrical log due to various abnormal conditions of the drilling mud, etc.

COMPLEX GEOLOGY OF CALIFORNIA

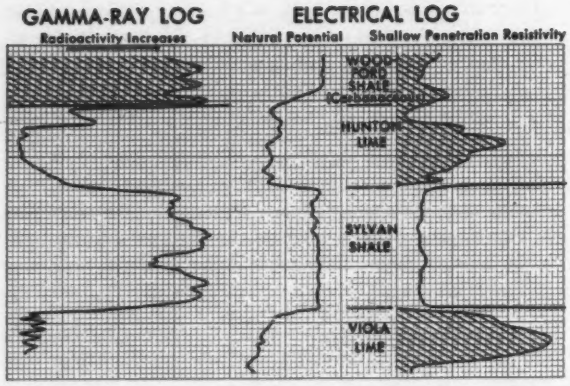
Correlation between electrical logs and radioactivity logs in California is often complicated by the exceedingly complex geology of this area. Of particular interest in making such correlations is the effect of shaly-sand and sandy-shale phases on the two types of curves.

The change from solid shale to sandy-shale is normally reflected by a relatively small change in response on electrical logging curves. This is especially true of the "Averaging" Shallow Penetration Resistivity and all Deep Penetration Resistivity Curves. The Natural Potential and "Detail" Shallow Penetration Resistivity Curves represent this change by showing considerably more activity and detail but, in general, would still be said to remain on the shale side of the log scale. The Gamma Ray Curve has been found to be very responsive to the presence of even relatively small amounts of sand and tends to respond toward the sand side of the log under such conditions. This variation in response is often of great interest in correlating the two types of measurements. It is illustrated by a typical California section shown in Figure 4.

A brief study of this comparison log indicates that what appear to be nearly solid shales on the "Averaging" Curve in many places show distinctly sandy response on the Gamma Ray Curve. The presence of thin, interbedded sands is verified by referring to the Natural Potential Curve. When the "Averaging" Curve begins to indicate the presence of sands the Gamma Ray Curve may be registering strong sand response.

The Natural Potential and "Detail" Shallow Penetration Resistivity Curves are particularly useful in distinguishing the sandy-shale phases and it is important that these relatively minor changes in formation character be determined from the electrical log as a means of substantiating the response of the Gamma Ray Log.

It is now universal operating practice to calibrate the Gamma Ray recording device on each job by means of an



COMPARISON BETWEEN A GAMMA-RAY LOG AND ELECTRICAL LOG THROUGH THE SAME SECTION OF A WELL IN SEMINOLE COUNTY, OKLAHOMA. NOTE THE EXTREMELY HIGH GAMMA-RAY INTENSITY OF THE CARBONACEOUS SHALE (WOODFORD) SECTION.

Figure 3

accurate Radioactivity Standard. The procedure employed in the field is to place the Radioactivity Standard in contact with the center of the ionization chamber and to observe the deflection in inches of the recorder pen due to the standard. The amount of deflection is noted in the log heading as the sensitivity scale of the curve.

The difference between this method of indicating sensitivity and that used on electrical logs should be pointed out. The sensitivities of Radioactivity Curves represent the amount of deflection in inches per fixed radioactive intensity. Electrical log sensitivities represent the millivolt or ohm-meter sensitivity response of the measuring instrument. This results in the sensitivity of the Radioactivity Log increasing with an increase in the "inches of deflection" scale while electrical logs decrease in sensitivity with an increase in ohm-meter or millivolt scales. For example, a Radioactivity Log of 20 inches deflection for a given standard is twice the sensitivity of one having a 10-inch deflection for the same standard. An electrical log, however, is only one-half as sensitive on a 20 ohm-meter scale as on a 10 ohm-meter scale.

SENSITIVITY CHANGES

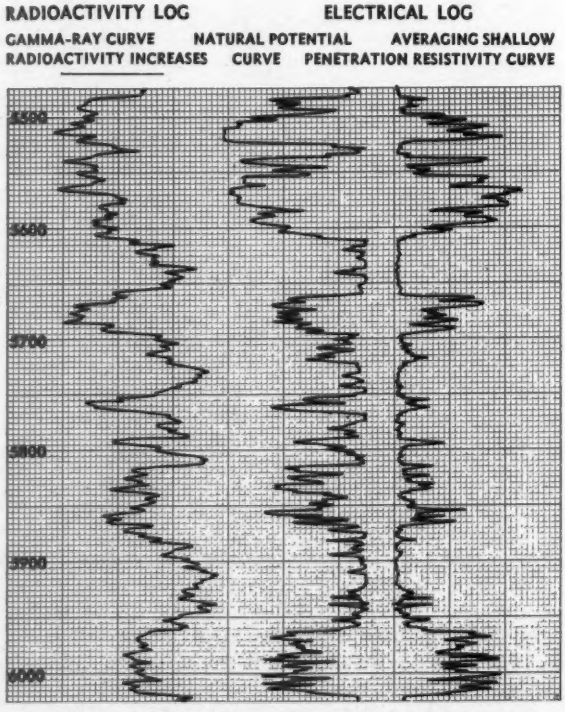
It is often desirable to change the Gamma Ray or Neutron Curve scale sensitivity during a portion of a run in order to amplify or reduce certain groups of formations. These scale changes are indicated in the heading of the log and should be taken into consideration in correlation work. Changes in the curve sensitivity during the run may result in a shifting of the normal shale line which should not be confused with the formation changes. When comparing Gamma Ray Curves in the same area it is desirable to note the relative scales used.

Sometimes local well conditions may result in a shifting of the normal shale line value. A change in the number of casing strings will cause a slight shift of the shale base line of the Gamma Ray Curve as well as affect the intensity of the curve. Entering or leaving fluid usually causes a negligible shift on the Gamma Ray Curve but results in a very definite break in the Neutron Curve. There are many more factors which influence Radioactivity Logs to a greater or less degree, some of which are not entirely understood.

To facilitate correlation with electrical logs, two depth scales are available on the Radioactivity Log recorder. These scales are one inch per one hundred feet of depth and two inches per hundred feet of depth. It is the general practice to record Radioactivity Logs with the same depth scale as that being used with the electrical logs in a given area.

CONCLUSION

The electrical log and Radioactivity Log, being measurements of entirely different properties of the formations, have entirely different response characteristics. However, if the typical characteristic response for the various types of formations on the Gamma Ray Curve or Neutron Curve is understood it is possible to correlate the Gamma Ray Curve or the combination Gamma Ray and Neutron Curves readily with the electrical logs from well to well.



GAMMA-RAY, ELECTRICAL LOG COMPARISON IN HIGHLY STRATIFIED FORMATION.

Figure 4

(Continued from Page 8)

nearest fields, if known, and a copy of the contract if it has been written.

On dry gas, the maximum must not exceed that under a contract in effect on October 1, 1941, or a renewal of that contract.

If the seller had contracts in effect on October 1, 1941, with other purchasers, the maximum price to a new buyer must not exceed those under such contracts.

If the seller had no contracts in effect on October 1, 1941, his ceiling must not exceed prices of his most closely competitive sellers.

If all of these provisions are inapplicable, tentative prices may be set, subject to the same terms and conditions as set forth for sales of wet gas.

Stations Allowed Margins

The Office of Price Administration has also issued a letter of explanation to Amendment No. 10 of Maximum Price Regulation No. 137, which controls service station prices for gasoline.

The amendment is designed to afford relief to those operators whose sale prices were fixed at the highest level prevailing in March and whose margins have been reduced because tankwagon prices were fixed as of October 1-15, 1941, and at that time might have been higher than tankwagon prices prevailing at the fixing time of retail prices.

In substance, the amendment permits the retailer to increase his price, even though it goes through his ceiling, to the level that would restore his margin to that prevailing in October, provided that in so doing, he does not increase his retail price above that prevailing in October.

Explaining this point, the OPA letter says:

"For instance, a retailer's price in October was 20 cents per gallon which allowed him a 4-cent margin. In March, due to a reduction in the wholesale prices his price was 18 cents, which also allowed him a 4-cent margin. Subsequent to the establishment of his 18-cent March price as his maximum, the wholesale price is increased 1-cent, resulting in reducing his margin to 3 cents, in that he cannot increase his 18-cent maximum price. Under this amendment, he may increase his price 1 cent so as to provide him with a 4-cent margin since his ne wmaximum, which will be 19 cents, does not exceed the 20-cent price he had in the October period, plus any authorized increases currently effective."

Gasoline Sales Off

August net taxable gasoline sales in California were the smallest for any August since 1938, according to the State Board of Equalization, which administers the tax, reflecting reduced use of automobiles as motorists "cared for their cars—for their country."

Taxable sales for the month were 52,900,000 gallons, in round figures, compared with 62,500,000 gallons in September, and practically unchanged from July, but 15.3 per cent less than the 62,500,000-gallon figure for August, 1941.

For the first eight months of 1942, taxable gasoline gallonage in the state dropped 10.3 per cent, from 1,392,800,000 gallons in 1941 to 1,248,500,000 gallons in 1942.

Indicating one effect of reduced motoring, in addition to the actual loss of gasoline gallonage, the Marketing Committee for District No. 5 reports that 2120 service stations were closed in California as of September 1.

Not all of these closings were due to lack of gallonage, however, as the problem of labor supply is becoming more and more acute. Most recent indication of that acuteness is a current "help wanted" advertisement placed by the Standard Oil Co., in which the company called for women service station attendants.

Tide Water Associated, General Petroleum, and Union Oil Co., as well as a number of independent marketeers, have included women in their service station personnel.

A. P. I. Report on Fatal Injuries

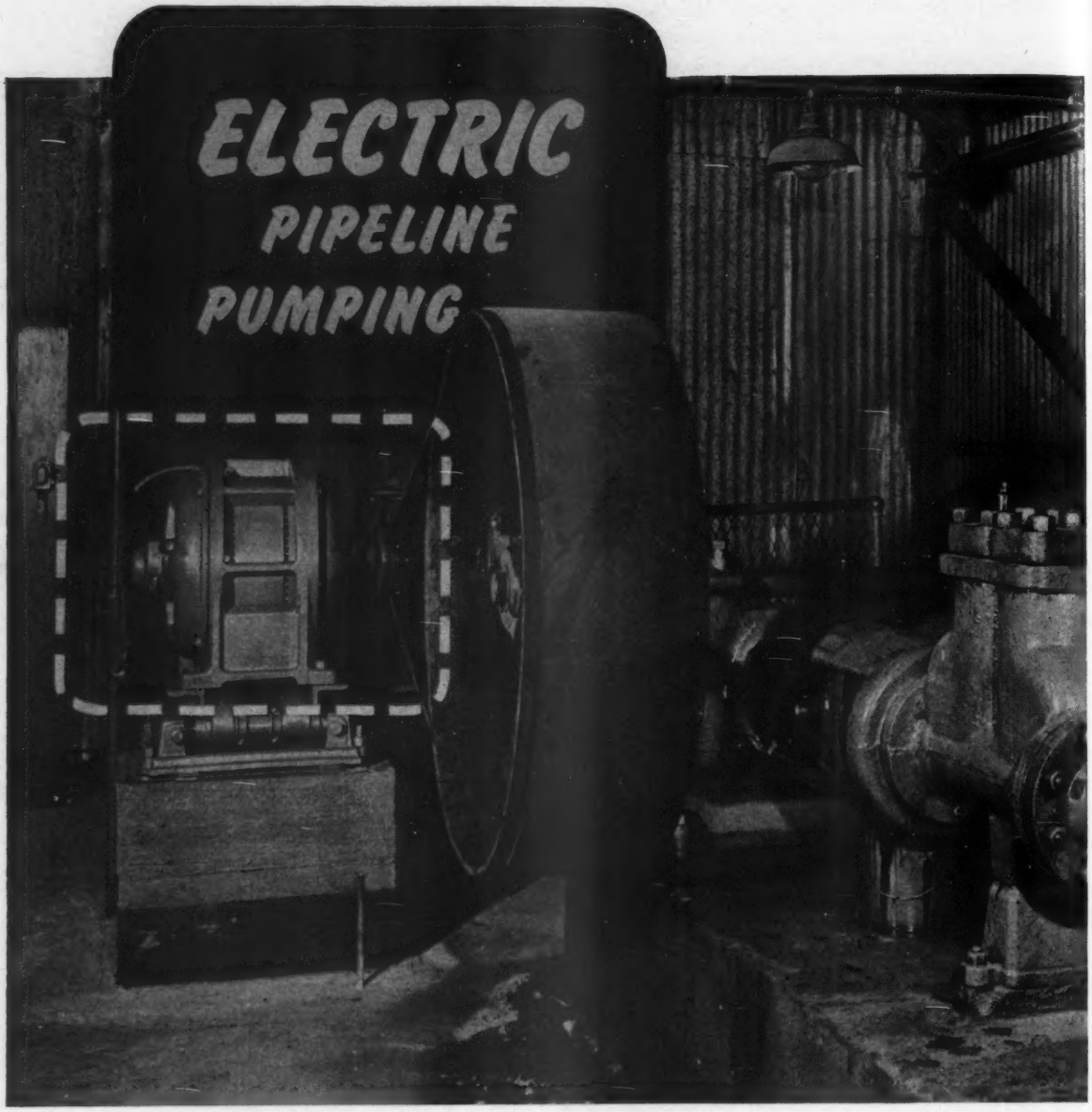
American Petroleum Institute review of fatal injuries in the oil industry in 1941 shows 113 fatalities among the 333,122 workers reported, a fatal-injury rate of 33.9 for each 100,000 workers. This is 10 per cent greater than the 30.9 fatality rate reported for 1940. The greater part of the increase was reported by refining departments, which showed 50 per cent more fatalities in 1941 than in 1940. Refining fatalities rates reported for these years were 31 and 45, respectively. Oil companies which sustained 109 of the 113 fatalities in 1941 have reported information on the accident causes, and 96 of these are reviewed in the A. P. I. report.

Nomads Barbecue Most Successful

Over two hundred Nomads, guests and wives of Nomads and guests attended the Annual Barbecue of the Los Angeles Chapter of Nomads held at the Hollywood Trout Lakes Saturday, September 26, 1942. The attendance exceeded expectations and from reports received the party was most successful from every standpoint. The Lakes were opened for the exclusive use of the Nomads at 3:00 p.m. and dinner was served at 5:30. In addition to trout fishing there was dancing and other entertainment.

Among the guests were John H. Baird and I. Frank Brown of the New York Chapter of Nomads. The foreign guests included: Mr. and Mrs. H. C. Creath, formerly of the Colombian Petroleum Co. who have just returned from Pearl Harbor; Mr. and Mrs. H. J. Buddenhagen, formerly of the Caribbean Pet. Co.; Mr. and Mrs. P. M. Bowen, D. & E. Co. of Brazil; Mr. and Mrs. B. R. Cunningham, Caribbean Pet. Co.; Mr. and Mrs. John Domercq, Calif. Arabian Standard Oil Co.; Mr. and Mrs. L. E. Grainger, formerly of Caribbean Pet. Co.; Mr. and Mrs. A. N. Lucie-Smith, Caribbean Pet. Co.; Mr. and Mrs. Meade McCamey, N. K.P.M.; Mr. and Mrs. C. H. Vincent, Assam Oil Co. Ltd.; Mr. and Mrs. Jess Rector, Lethbridge, Alberta; Mrs. Walter L. Little, Int. Pet. Co., Ecuador; Mrs. Ernest H. Smith, Calif. Arabian Standard Oil Co.; G. G. Goodwin, Tropical oil.

A WARTIME MEASURE FOR ALL TIME EFFICIENCY



You may accept Electric pipeline pumping now as a wartime measure—to save equipment, to reduce maintenance costs, to pump more economically. You will keep on using Electric pumping after victory for the very same reasons.

1. *To save equipment:* **Smooth power means longer life for the pumping equipment.**

2. *To cut maintenance costs:* **Needs less man-hours for flawless operation—requires fewer shut-downs for parts replacement and repairs.**

We will be glad to give you the proof of these statements evident in specific installations.

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

New Direct-Current Drilling Equipment in Deep Well Service

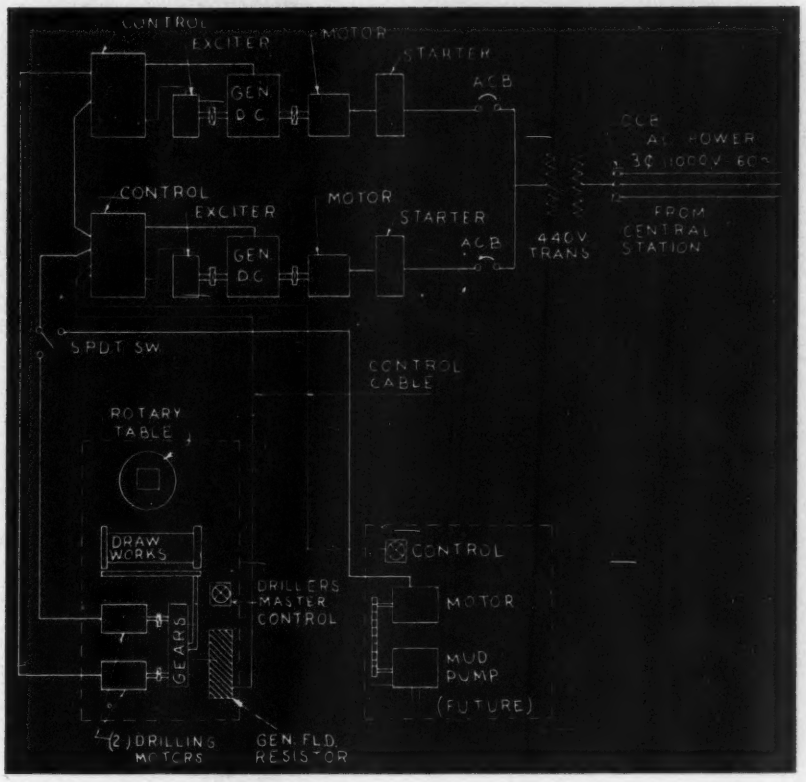
By L. D. Banderob
Electrical Engineer
Belridge Oil Company
Los Angeles, California
and
P. L. Savage
Engineer
General Electric Co.
Los Angeles, California

During the month of December 1941, the Belridge Oil Company put into operation a direct-current electric drilling equipment of most modern design. Operating in the North Belridge Field during the past few months the equipment has given an excellent account of itself, since it provides those qualities most desired by drillers, namely: ample power, flexibility, ease of control and portability.

Direct-current equipment was selected because it offers the smooth control of power and flexibility, characteristic of a modern steam rig without the attendant difficulties required in moving and setting up boilers and the problem of obtaining fuel and water.

The equipment is unique for several reasons. It is the highest powered electric drive so far built for rotary drilling. It is the only existing direct-current drilling equipment using a-c power supply, as the d-c generators for such a drive are usually driven by internal-combustion engines. The arrangement of the electric equipment, especially the d-c power supply and the portable substation, offer the maximum in portability; and once the equipment is in place, electrical connections are a matter of minutes.

A convention type drawworks is driven by two direct-current drilling motors rated 250 horsepower each. These two motors are capable of delivering considerably in excess of 800 horsepower for hoisting operations. Since the motors may be required to run at very low speed for long periods of time during the drilling operation, ventilation is supplied to them by a blower, which takes air from a remote point to insure against the presence of explosive gases. Provision is made in the control scheme so that the ventilating fan is started a short time prior to applying power to the motors, in order that all explosive gas will be purged from the ventilating system. The two drawworks motors are connected to a twin-gear, which in turn is chain-connected to the drawworks jack shaft.



Schematic diagram of direct-current drilling equipment.

Direct-current power for the drawworks motors is obtained from two motor-generator sets located approximately 150 ft. from the derrick floor and therefore well away from any possible gaseous area. Alternating-current power for driving the two a-c motors on the m-g sets is obtained from the power plant owned and operated by the Belridge Oil Company; this power is delivered to the portable substation from a 11,500-volt transmission line. The portable substation provides the 110-volt lighting service and the 480-volt, 3 phase power necessary to operate the a-c motors. The use of motor-generator sets is unusual in oil field history and, as far as we know, this is the first time a d-c drilling equipment has been satisfactorily operated from central station power.

There are two motor-generator sets, each mounted on a self-supporting skid base. Each set is complete in itself and consists of a 350-horsepower induction motor, driving a 200 KW direct-current generator. Each set also includes a direct-connected exciter rated 15 kw at 125 volts. Either exciter

is capable of providing all excitation required.

With the exception of the driller's control, all control equipment is mounted in two cabinets—one of which is mounted on each of the motor-generator bases and remains a fixed part of this unit.

In order to give the driller complete control of the power unit, all control push buttons are brought to the derrick floor by means of a multiple-conductor cable. It is therefore, possible to start and stop the motor-generator sets without the necessity of leaving the derrick floor.

There are two motors on the drawworks, each operated by its own generator, and it is possible to use either or both motors depending on the operation and the amount of power required. For instance, when coming out of the hole with a heavy load both generators and both drawworks motors can be used. When rotating drill pipe, only one motor and one generator are required. The idle generator can be utilized for a mud pump drive. The motor-driven mud pump has not been put into operation at the present time due to delay in obtaining the motor under present war conditions. The necessary equipment is due to arrive in the near future, at which time it will be installed and the drilling rig will then be completely operated by direct-current.

Control of the motors is by means of generator field control. This type of control has proven very satisfactory for oil field service, for complete control of the motors is accomplished without handling heavy current. When both motors are in operation on the drawworks, the generator fields are placed in series, thus insuring that each generator will take its share of the load.

The driller's control is simplicity itself and consists of a single hand wheel and two push buttons. The push buttons allow the driller to select either or both motors, depending on the amount of power required.

A half-turn of the control wheel in the clockwise direction takes the motors from standstill to full speed forward so smoothly that the individual steps are not noticeable. To reverse the direction of the drawworks, it is only necessary to turn the control wheel in the opposite direction. The necessary meters are mounted as part of the weight indicator assembly and inform the driller of operating conditions for both the pump and drilling motors.

Among many advantages of the use of direct-current for drilling operations is the fact that torque and horsepower can be definitely limited by generator adjustment to suit the mechanical equipment being used. In this case, the horsepower is limited to somewhat over 800 as it is felt that more power applied to the present equipment would increase the strain on gears, drawworks and lines to the point where maintenance costs would be excessive.

The building housing the m-g sets is a simple frame building, with a removable floor, made rigid enough to withstand moving from location to location on its own skids. (Switches and starters are left permanently installed.)

In practice, because drilling is confined to one field with relatively level terrain, it has been found most economical to simply tow the equipment from well to well with tractors. The house is first spotted and then the m-g sets pulled into place. The portable sub-station consisting of 600 kva in power transformers and the lighting transformers, is complete with its own fence, bus, oil switch, etc. This is likewise pulled into place with tractors.

The electrical hook-up is simple. The large d-c cables and control cables are laid in a plowed ditch. The control cables are provided with plugs and are connected to the couplers by plugging in. The various leads to the motors are identified by markings and can be connected readily.

When all motor connections are made, the sub-station is connected to the 11,500-volt line and as far as the electric equipment is concerned, drilling is ready to begin.

The first well drilled with this equipment was carried to a total depth of 9673 ft. and is producing from a depth of 8550 ft. The equipment is currently at work on the second well.

This first well, being exploratory, was subjected to considerable testing, involving many and frequent trips in and out of the hole under varying conditions which afforded experience with the drilling motors comparable to drilling several deep wells. This experience provided an excellent opportunity to gauge the performance of this new equipment, the following being apparent:

(1) The flexibility equals that of the finest steam equipment.

(2) The ease of control and smoothness of control exceed that of any other equipment of the writer's experience, either steam, gas engine, or a-c electric.

(3) The torque limiting feature inherent in this equipment is of great value in hoisting through tight places through "keyways" in the hole, when rotating in difficult drilling or when "fishing" This feature provides at all times a cushion beyond which it is impossible to load the driven equipment.

(4) The motor speed increases automatically as the load becomes lighter to a maximum of 1270 r.p.m. with an empty hook which is ample. Therefore, each stand of pipe is hoisted at a higher speed than the preceding stand. In effect, this is comparable to a mechanical drive with an infinite number of gear ratios and with each correct gear ratio automatically selected.

(5) The performance of the electric equipment does not decline with continued hard use.

All of these advantages together with the fact that there is ample power for deep drilling, result in fast, economical drilling, long life for equipment, and complete driller satisfaction.

MAKES HOLE FASTER . . . .

moved and rigged-up faster and easier

NOTE

THESE SPECIAL FEATURES

- Drawworks frame exceptionally strong and rigid, and bolted to main skids.
- Chain drives pressure lubricated inside of drives . . . not outside.
- Drilling line can be attached to drum without removal of any guards.
- All parts easily accessible.
- Six hoisting speeds and three rotary speeds assure maximum hoisting and drilling efficiency.
- Instantaneous reversals can be made at all times.
- Entire rig is controlled and operated from driller's position.

EMSCO TYPE G-42 POWER RIG

Performance under the most severe operating conditions has proved repeatedly that the Emsco Type G-42 Power Rig is the most advanced equipment available for fast, economical drilling up to 6,000 feet. It gives maximum performance . . . with minimum bulk, weight and price. The entire rig has been designed so that it can be moved as a unit on the main skids if road clearances permit. When necessary, it can be quickly and economically dismantled into three component parts.

Distributed Exclusively In California By

THE PUBLIC SUPPLY CO. of CALIFORNIA

Field Development

Los Angeles Basin

Havenstrite Hits New Del Valle Zone

R. E. Havenstrite, Operator, who made the original field discovery, has apparently proved the presence of a new producing zone in the easterly pool of the Del Vale field with Barnes No. 2. Located in sec. 16, 4n-17w, the well drilled into the new deep section after noting the normal Sherman and Del Valle zones in place. No appelation other than the "7900 ft. zone" has been given the section pending more complete stratigraphic examination.

Proof that the gas and oil sands are good beyond question was obtained when a 40 minute formation test of the interval 7866-7977 ft. flowed 42.5 gravity clean oil at an estimated 4000 bbl. rate through a 3 in. open line under 325 lbs. pressure. Although unmeasured, the gas was estimated to have made a 5,000,000 cu. ft. rate during the test.

When last reported the well was coring ahead at 7995 ft. in silty oil sand with the intention of making a complete examination of the new zone.

In the westerly field pool, Ohio Oil Co. is coring Vasquez No. 4 ahead near completion level after marking oil sand and shale at 5037 ft. with the top of the zone as yet unrevealed. Standard Oil Co.'s offset in the same section 17, 4n-17w, Sepulveda No. 4, is in shale at 4911 ft. after coring shale, gray sand and oil sand in the interval 4782-4550 ft. Next to enter the play will be Herley-Kelley—discoverers of this accumulation—who plan to drill Handy No. 1 700 ft. north and 630 ft. west of the east quarter corner of the southeast quarter of sec. 18,4n-17w.

Bandini Redrilling Santa Fe Springs Well

Bandini Petroleum Co. let a contract to Bell & Loffland to redrill Off No. 19 south of Central and Anaheim-Telegraph Road in the Santa Fe Springs field. Operators are presently plugging to redrill and recomplete in the Bell zone.

Terminal Island Well Completed

Long Beach Oil Development Co. finished No. 34 on the "W" parcel at Terminal Island from plugged depth of 3805 ft. pumping 237 bbls. of clean 16.5 gravity oil after the well showed a disposition to flow during bailing and swabbing to clean up. The company is drilling No. 36 and No. 40 after just completing No. 37 flowing 370 bbls. of clean 18.5 gravity oil from 3126 ft. as the first completion in a 12 well program on the Island.

In the Harbor area near Water and Pico Avenues, D. D. Dunlap & Jonah Jones, Jr. finished L.B.H.D.-

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LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Castaic	The Texas Co., Towle	1	3, 4-17	6456	Drilling
	Young, Roy W., Inc., Walker	1	11, 5-16	9981	Idle
Del Valle	Union Oil Co. N. L. & F.	1	20-4-17	3865	Drilling
Las Llajas	West'n. Gulf O. Co., Brady	1	13, 3-17	1500	Drilling
Newhall	James C. Brazell, Trustee, Perkins	1	11,3-16	4473	Idle
Puente	Shell Oil Co. Inc., Garnier	1	33, 1-10	3258	Drilling
Puente Hills	Commonwealth Oil Co., Roland	1	14, 2-10	1260	Fishing
	Melvin Hansen, Dragna	1	24, 2-10	2614	Drilling
Rio Hondo	Potrero Oil Co., Newman	1	32, 1-11	5430	Cleaning out
San Fernando	Fernando Oils, Ltd., Chatsworth	1	18, 2-16		Rig
	Tide Water Assoc., Sesnon	1	28, 3-16	8912	Redrilling
Whittier-La Habra	Los Nietos Valley Oil Co., Woodward	1	29, 2-11	2800	Idle
	Orange County				
Buena Park	The Texas Co., Buena Park 4F	1	36, 3-11		Rig
Costa Mesa	Thompson, Milton N., Banning	1	9, 6-10	5649	Idle
	Riverside County				
San Jacinto	Wonder Oil Co., Stroh	1	30,4-1		Rig
	San Bernardino County				
Carbon Canyon	Stella, E. F., McDermott	2	5, 3-8	675	Drilling
	Municipal Oil Co., Mahala	1	13,3-8	4217	Cleaning out

Cerritos No. 2 pumping 75 bbls. of clean 16.0 gravity oil from 3130 ft. Activity in the townlot section of the field is confined to the Allied Pet. Corp. redrill on well No. 25. This project was plugged and redrilled to 3705 ft. where gravel packed liner is being landed.

At the northerly flank of the Wilmington field section The Texas Co. is finishing Refinery Fee No. 4 at 3395 ft. and is pouring foundation for No. 5 on an adjacent location. The wells are located near Goodrich and State Streets.

Texaco Starts Buena Park Well

The Texas Co. moved in a rig to drill Buena Park 4-F No. 1 at a location 968 ft. south along the centerline of Dale Avenue from the centerline of Whitaker Avenue, thence 936 ft. easterly at right angles in sec. 36,3s-11w. The site is located north of the discovery Spencer No. 1 and east of the recently completed Buena Park 4-E No. 1 in the same section.

Yorba Linda Well Flowing

Shell Oil Co., Inc.'s latest effort in its heavy oil development program at the north flank of the Yorba Linda field was rewarded when Yorba Linda Fee 4 No. 87-16 started flowing through the pump before the unit was started up. Bottomed at 2115 ft. the project was plugged to 1951 ft. and 8⅝ in. casing cemented at 1620 ft. with 6⅝ in. liner perforated in the intervals 1945-1711 and 1686-1620 ft. With 2½ in. tubing in the hole and the pump barrel at 1600 ft., the well showed a disposition to flow and was allowed to come in for an initial 61 bbls. through a 22/64 in. bean under 175/360 lb. pressure.

The Company has graded location for No. 46-16 and is completing the selection of a site for its successor. Shell plans to drill up all acreage in the area which is proved productive, employing one string of tools on a continuous basis.

J. H. Marion to Try Athens Area Redrill

John H. Marion is moving in cable tools to knock bridge plugs out of the old abandoned Union Oil Co. Howard Park No. 4 at Athens and inspect the casing before proceeding to rig heavy rotary and redrill in accordance with permission from the OPC. Casing in this well was knife perforated prior to abandonment and it may prove better to utilize existing permission for a grass root job in the area.

Prepare to Spud Redondo Project

At press time Wood-Callahan Oil Co. Dominguez Estate No. 3 was in the final stages of rigging up to drill for heavy oil 1227 ft. north and 330 ft. east of the southwest corner of the Dominguez Estates near Victor and Huntington Streets in the Redondo field. It is reported that J. E. Pettijohn is preparing to build rig for his Dominguez No. 1 on an adjacent location.

OUR PEACE-TIME EX PERIENCE INSURES WAR- TIME EFFICIENCY
Through the years, we were designing and producing gears for full revolving cranes, like these of Colby Steel & Engineering Co., Seattle.
Today, we are building gears to elevate and turn large naval guns like the ones in the picture above.
Crane gears had to take the terrific strain of quickly swinging loads in either direction, and bear the shock of checking momentum.
Gun gears have to move fast, surely and withstand the concussion of rapid, heavy firing.
What we learned in building the right kind of gears for cranes is being used by us today in building the right kind of gears for guns.
In four major plants on the Pacific Coast we are supplying the gears and geared products for a great part of western America's industrial and military production.
The problems of war we solve today, will give you better gears, faster, in peace.
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Coastal District

Lytle Spuds Bardsdale Try

R. S. Lytle spudded his Eocene zone try, Elkins No. 1, and was last reported drilling at 276 ft. on sec. 6, 3n-19w. On section 7 of the township San Marino Oil Co. is planning to move equipment to its Elkins No. 1 for which rig has been built.

Hancock & Bush Finish Hopkins 6

Hancock Oil Co. & R. R. Bush Oil Co. continuing their cooperation in Santa Maria Valley, finished the first of four new projects when Hopkins No. 6 on sec. 25, 10n-34w was completed at 4663 ft. for an initial 703 bbls. of 16.6 gravity oil cutting 3.0% 8⅝ in. casing was cemented over the top of the Miocene at 3655 ft.

Next to finish will be Brown No. 4, now standing with water string cemented at the top of the Miocene, to be followed by Rosenblum No. 4 last reported at 745 ft. Both strings are in section 25 with the fourth effort to be Wylie No. 5 for which rig is up in sec. 30, 10n-34w.

With several locations partially prepared in this field Union Oil Co. is at present operating but one string of tools. The drill is currently employed on Vincent No. 8, sec. 25, 10n-34w, which was last reported resuming after cementing surface casing at 725 ft.

Pacific Central Oil Co.'s Defense No. 1, on section 20 of the same township, is having difficulty in pumping.

Bottomed at 4340 ft. the well has been unable to sustain a rate long enough for an accurate gauge, but estimates place the returns between 100 and 180 bbl. rates on short intervals.

Ventura Avenue Work Continues

Work in the Ventura Avenue field continues in a steady but unspectacular fashion. Latest to schedule activity is Victory Oil Co. which is setting boilers to redrill and deepen Foster No. 3 at the southerly flank of the field.

At the north flank Lloyd Corporation is swabbing for production in No. 3 after cleaning out and gun perforating for a recompletion. The company is rigging up No. 9 for an early start.

In the westerly central section of the field Shell Oil Co., Inc. is operating two strings on the Taylor lease. Nearest completion is No. 147—last reported coring oil sand and shale at 9090 ft. after getting a water shut off on 7 in. casing cemented at 8060 ft. The company's No. 156 is making hole at 7094 ft. while rig is up for No. 157.

Cat Canyon Well In Chert Showings

Bel-Air Oil Co.'s Williams No. 1 sec.25,9n-33w, is drilling ahead in Chert containing medium good oil showings at 5265 ft. No cores have

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
	Santa Barbara County				
Careaga	Univ. Consol. Oil Co., Careaga	1	5, 8-33	3347	Drilling
Cat Canyon	Alphonzo E. Bell Corp., Gilmore	1	23, 9-33	6457	Idle
	Bel-Air Oil Co., Williams	1	25, 9-33	5079	Drilling
	Standard Oil Co.	SBLC1	15-9-33	5245	Redrilling
	Standard Oil Co., Los Flores	5	33, 9-33	2233	Drilling
Lompoc	Alphonzo E. Bell Corp., Lompoc	6	28, 8-34		Grade
	Fickert Oil Co., Ltd., Well	1	8, 7-33		Rig
Los Olivos	Tide Water Assoc. O. Co., Davis	1	33, 8-31	5856	Drilling
Orcutt	Standard Oil Co., Rice Ranch	1	14, 9-34	9254	Suspended
	Ventura County				
Bardsdale	Hopland Oil Co., Well	1	1, 3-19	4634	Idle
	Lytle, Robt. S., Opr., Elkins	1	6, 3-19	276	Drilling
	Santa Marino Oil Co., Elkins	1	7, 3-19		Rig
Conejo	Sycamore Oil Co., Boylan	1	23, 1-20	2747	Idle
	L. A. Basin Oil Co., Well	1	4, 1-20	1746	Idle
Eureka Canyon	Phillips & Nichols, Well	2	33, 4-18	667	Idle
Ojai	Coates, Spencer D., Pirie	5	7, 4-22	1024	Drilling
	Kelalee Pet. Co., Harvey	1	8, 4-21		Rig
Oxnard	Royalty Service Corp., Leonard	1	19, 2-22	8417	Abandoned
Piru	Delroy Pet. Corp., Fisk C. H.	1	22, 5-18	2629	Idle
	Tide Water Assoc. Oil Co., Hidden	2	5,4-18		Location
Sespe	Merchants Pet. Corp., Cochran	1	4-20	1880	Drilling
	Volunteer Pet Co., Tar Creek	3	28, 5-19		Mov. in cb. tls.
Timber Canyon	Crude Oils., Inc., West	1	19, 4-20	958	Idle
	Henderson-Ortez Oil Co., O'Leary	1	29, 4-20		Rig

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Colusa	Pacific National Pet. Corp.	1	17,17n-4w	1402	Idle
Contra Costa	Joseph Faria, Jr.	1	21-2n-1w		Rig—Idle
	Standard Oil Co., Jordan Unit	1	29, 3n-3e		Grading
Glenn	Ohio Oil Co., Willows-Block	A-1	18, 20n-2e	914	Drilling
Humboldt	The Texas Co., Holmes-Eureka	2	22-3n-1w	5200	Drilling
Madera	Blake, T. E., Chuck	1	28, 10s-17e		Rig—Idle
	The Texas Co., Chowchilla	27-26	26,11s-14e	6541	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23,24s-10e	4318	Idle
	Wm. C. Jensen, Vierra	1	7-13s-2e		Rig
San Benito	Union Oil Co., Friedman	1	13,16s-12e	5016	Drilling
San Joaquin	Standard Oil Co., Blewett Com.	3	23, 3s-6e		Rig
Solano	Standard Oil Co. Fontana Farms	1	23,3n-1w		Rigging Up
	Standard Oil Co., Suisun Com.	1-2	36,4n-2w	5079	Drilling
	Standard Oil Co., Suisun Com.	2-1	25, 3n-1w	7300	Fishing
Tehama	The Texas Co., Walbridge	1	32,28n-2w	1033	Drilling

been taken in the Miocene—topped at the 4300 ft. level—but oil sands were cored in the middle Sisquoc at 2458 ft. with top of the age found at 1840 ft.

On sec. 15, 9n-33w Standard Oil Co. gave up attempts to recover a stuck tester after making 5245 ft. of hole, plugged South Basin-Lloyd Comm. No. 1 to 4915 ft. and is redrilling at 5021 ft. The company spudded Los Flores No. 5 on section 21 of the township and was last reported making hole at 2233 ft. in an effort to extend the Los Flores area production.

In the proved section of the Cat Canyon field Union Oil Co. finished Bell No. 15 at 5122 ft. on sec. 35, 9n-33w after entering the Miocene at 4055 ft. A 7 in. combination string including perforation in the interval 4592-5120 ft. was landed on bottom and cemented thru perforations at 2661 and 4582 ft. With 3 in. tubing at 5081 ft. the well was swabbed in through a 48/64 in. bean flowing 1760 bbls. of 19.4 gravity oil which cleaned up to 2% on the initial flow. Pressures were 120/540 lbs. while gas was measured at 1,904,000 cu. ft.

Tuscan Buttes Well Hits Surface Water

The Texas Co.'s Walbridge Estate No. 1 on sec.32,28n-2w of Tehema county turned into a salt water well while still in grass root stages. The drill encountered flowing saline fluid at 397 ft. and went ahead to 1033 ft. where the water still came under 115 lbs. pressure. The well is being killed and the rig will be skidded to another location to try again.

Standard Starts Jersey Area Try

Standard Oil Co. is grading roads to a minus 5 ft. elevation location in the river area south of the Rio Vista gas field. The project will be called Jordan Unit No. 1 and is located on sec. 29,3n-3e, southeast of the town of Jersey in Contra Costa county.

Field Completing Gato Ridge Well

O. C. Field is swabbing for production on Texas Fee No. 1, sec.4,, 8n-32w, after bottoming in brown shale and streaks of Chert at 4005 ft. With the top of the Miocene placed at 3250 ft. an 8⅝ in. combination string including 500 ft. of perforation was landed on bottom for the trial.

Careaga Test Half Way Down

Universal Consolidated Oil Co.'s Careaga No. 1, sec. 5, 8n-33w some two miles southeast of the old Orcutt field, is reported at 3347 ft. The well seeks Miocene production suggested by showings in earlier wells with the objective placed between 6900 and 7200 ft.

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San Joaquin Valley

South Belridge Activity Surges

The shallow, heavy oil development program in the South Belridge field is hitting a high, sustained pace with this week showing even more work. Completions in the past fortnight by Belridge Oil Co. total nine jobs with recovery averaging 80 bbls. of 13 to 14 gravity oil from 750 to 800 ft. depths. Definitely considered well qualified for steel expenditure by governmental agencies, the field is expected to continue active until all available acreage is drilled up. Belridge is at present working on another series of the post holes.

On the Emily Hopkins Fee Lease in sec.4,29s-21e, Ohio Oil Co. is completing No.'s 2 and 3 at the 850 ft. level, is rigging pump on No. 4 and is preparing to move to No. 5.

General Pet. Corp. is continuing its program on sec. 3,29s-21e with No.'s 3-3A and 3-76-A finishing while foundation is poured for two more projects.

Standard Flows B. V. Hills Well

Standard Oil Co. finished well 15-19D on sec. 19,32s-24e of the Buena Vista Hills at 2650 ft. flowing a 450 bbl. rate before being shut in. The company is drilling No. 103-15D at 2730 ft. on section 15 of the township and is rigging up No.'s 100 and 102-35B in sec. 35,31s-23e. Standard has eight other sites staked in the Hills for immediate drilling.

To the south of the Hills in the Midway-Sunset area Standard has No.'s 100-33D and 89-5K ready to pump after completing 68-31E on sec. 31,12s-23e pumping 61 bbls. of 27.8 gravity oil cutting 0.4%.

Mount Poso Work Sees Increases

Activity in the Mount Poso area of Kern County is on the increase. In the immediate past Union Oil Co. started ground work for S & M No.'s 35 and 36 on sec. 4,27s-28e. Signal Oil & Gas Co. staked location for Signal-Bishop No. 3 on sec. 22,27s-28e while considering site for Glide No. 23-3 on an adjacent location.

C.C.M.O. Co. continues its program on the Mon lease in sec. 26,27s-28e with No. 6 ready to pump from 1597 ft., foundation poured for No. 7 and No. 9 with No. 8 already turned to the tanks pumping 100 bbls. of 15.7 gravity oil cutting 26% from Vedder sands at 1460 ft.

Off the northwesterly tip of the field Ring Oil Co. is rigging up to drill Glide No. 1 as an outpost in the northwest quarter of sec. 19,26s-28e.

Poso Creek-Premier Well Proves Wet

Standard Oil Co.'s well No. 1-8, sec. 8,28s-27e, bottomed at 2900 ft. after landing 8⅝ in. casing at 2710 ft. and completed through perforated liner pumping 59 bbls. of oil and 236 bbls. of water. The company is running a witch to determine the point of entry. Apparently the well can be dried up for Standard is running two other strings in the section and has scheduled 8 more locations in the immediate area.

Westn. Gulf Works Fruitvale Field

Western Gulf Oil is conducting a program to obtain good war time quality crude from the Fruitvale field of Kern county. Latest to finish after deepening from 3058 to 3550 ft. is KCL. No. B-28 currently pumping 119 bbls. daily. KCL No. B-42 is testing after deepening from 2955 ft. to 3457 ft. in oil sand and KCL No. B-18 is deepening at 3668 ft. The company is drilling the grass root Red Ribbon Ranch No. 13 ahead in oil sand at 4300 ft. after cementing 7 in. casing at 4297 ft. and has poured foundation for No. 14 as another new hole in the same sec. 27, 29s-27e.

In sec. 26,29s-27e, Petrolia Corpor-

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Coalinga	The Texas Co.	83-18	18,21-15		Location
Guijarral Hills	Lytle, Robt. S., Opr., Well	68-28F	28,20-16	11,586	Suspended
	Standard Oil Co., Well	82-29F	29,20-16	7737	Drilling
Tranquility	Shell Standard, Henderson	66-22	27, 15-15	1020	Drilling
Wheatville	Gen. Pet. Corp., Noble	88-9	9, 17-18	8050	Drilling
	Kern County				
Comanche Point	L. E. Barat Synd., Ham Johns	1	5,11-18	1604	Idle
Dyer Creek	Fred Jasper, Jr., Well	1	16,26-27	4421	Abandoned
Edison	M.T.M. Oil Co., Inc., Well	1	23,30-30	2715	Suspended
McFarland	Tide Water Assoc. Oil Co. Strine	32-15	15,26-26		Rigging up
McKittrick	Americal Pet. Inc., Americal	1	2, 30-21	5450	Redrilling
	MacVee Assoc., Well	1	33,29-21		Grade
	Richfield Oil Corp., H-B-McK	1	3, 30-21	728	Drilling
	T.W.A.O. Co., Corehole Fee	1	34, 30-22		Grading
Midway-SE.	The Texas Co., P.U.P.	2	33,11-23	6451	Drilling
Paloma	Gen. Pet. Corp., Benco	87-28	33,31-26		Location
Paloma	Gen. Pet. Corp., Gallagher	61-33	33,31-26	11,043	Stdg. cem.
	West'n. Gulf Oil Co., L.A.C.	36-1	1, 32-26		Foundation
Poso Creek	Dolley & Dugan, Sesnon	1	17, 28-27		Location
Shale Hills	Tideland Oil Co., Grant Est.	1	4, 27-28	4064	Idle
Strand	T.W.A.O. Co., KCL	56-8	8, 30-26		Rigging up
	Kings County				
Alpaugh	Elmer C. vonGlahn, Well	1	4, 23-22	9700	Idle
Hanford	Cont. Oil Co., Drummond	1	36,18-22	6453	Drilling
Pyramid Hills	Pac. O. & G. Dev., West Slope	2	20, 24-18		Location
	San Luis Obispo County				
Midway, NW	C.C.M.O. Co., Thomas	1	1, 31-21	1706	Drilling
	C.C.M.O. Co., Well	25-1	1, 32-22		Location
	Tulare County				
Tulare Lake	Shell Oil Co., Inc., Tulare	21-28	28,22-20		Grading

ation acquired acreage from The Texas Co. and is turning well No. 2 to the right at 2310 ft. after cementing 13⅜ in. surface pipe at 530 ft.

Edward Gieck is understood preparing to redrill his 3136 ft. Greeley No. 1 on sec. 23,29s-27e with Miller and York doing the contracting.

Paloma Outpost Trial Delayed

The results of production trials on General Petroleum Corp.'s Paloma field outpost, Gallagher No. 61-33, were delayed when a shoe test of 7 in. casing cemented at 11,000 ft. proved wet. Interest in the well, located a mile north of present production in sec. 33,31s-26e, was heightened when a formation trial of the interval 11,000-11,043 ft. produced a terrific gas blow and a spray of greenish 34 gravity oil. Much lower structurally than present proved limits, and recovering oil differing from the high gravity condensate normally produced in the field, the well seems to indicate that a structural change occurs along the north flank of present field outlines. Opinions as to a separate accumulation or an extension of the old phase are varied with no concrete decisions yet declared.

Amerada Finishes Riverdale Well

Amerada Pet. Corp. completed Brum No. 58-15, sec. 15,17s-19e, at redrilled depth of 6780 ft. after acidizing and washing with oil. Prior to treatment the well had shown little inclination to flow but was effectively turned to the tanks making 410 bbls. of clean 35.9 gravity oil and 272,000 cu. ft. of gas through an 18/64 in. bean under 600 lbs. flow pressure.

Young No. 4-15 is trying for a water shut off on 7 in. cemented at 7940 ft. before sharpshooting into upper Eocene sands for trial. The well was carried to 8050 ft. finding the Eocene age at 7918 ft. and the barren Cretaceous at 8075 ft.

The company is taking side wall samples at 6840 ft. in Leal No. F-121-26 and is rigging up on Clemente No. 72-22 while Hancock No. 58-23, sec. 23,17s-19e, is making hole at 4689 ft.

von Glahn Suspends Alpaugh Area "Cat"

Elmer C. von Glahn's wildcat in the Alpaugh area of Kings county is suspended in gray sand at 9700 ft. Located in sec. 4,23s-22e, the well found evidences of gas during drilling but to date no indication has been given that showings worthy of testing were encountered.

In the Hanford area of the county, Continental Oil Co.'s Drummond No. 1, wildcat in sec. 36,18s-22e, is coring continuously in unreported formation at 6453 ft.

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Newhall Wildcat Plans to Deepen

Equipment is being readied to start deepening the Aztec Oil Co. Sanborn No. 1 on sec. 6, 3n-16w in the Newhall Area. The work is to be done by C. H. LeBow and Associates with a sparkplug rig capable of thoroughly prospecting the Miocene section. This well, located a mile and a half southeast of the most southerly production in the Newhall-Potrero field, was bottomed at 6113 ft. in hard sand and shale after a production trial with 7 in. casing at 5895 ft. recovered only fresh water. It is believed by many that the sands over which the casing was set are the fresh water sands above the first Newhall-Potrero zone and that the well has not yet encountered the field zone equivalents. C. G. Willis Ferguson No. 1, nearest field producer, which is approximately 175 ft. lower than the Aztec well on surface structure, found the 1st Newhall zone at the 6700 ft. level after entering Miocene at the 6400 ft. mark.

The 3rd productive zone was proved wet in the interval 7220-7360 ft. and the well plugged to 7020 ft. and completed in the First Zone for 235 bbls. of clean 34.4 gravity oil and 220,000 cu. ft. of gas testing 1½ gal. per thousand through a 14/64 in. bean.

Round Mountain Strings Continue

Shell Oil Co., Inc. proceeds with its Round Mountain program. Just finished is Freeman No. 22, sec. 20,-28s-29e, at 1813 ft. from Vedder oil sands pumping 128 bbls. of 24.8 gravity oil. On section 7 of the township the company is rigging pump for Caldwell No. 22 after finishing at 2070 ft. in Vedder sands entered at 2043 ft. and is rigging up to drill Olcese No. 1-12 on section 21.

On sec. 20 of the same township Honolulu Oil Corp's No. 84 is bothered with circulation troubles after making 1055 ft. of hole and is building rig for well No. D on section 18,28s-29e.

"Oil Property Valuation" A New Book by Paul Paine*

The most important element in the valuation of oil property is the estimate of the amount of oil obtainable from that property. A great deal of writing has been done on this subject, but not from the angle of dollar-mindedness—this determination of the real worth of oil in the ground has been neglected. Mr. Paine, a man who has had 34 years of experience in the oil production business—the last 20 of which have been concerned with valuation matters—has written Oil Property Valuation in an attempt to meet this need. Of his material, about 15 per cent is concerned with the estimate of oil reserves—the balance of the book covers the financial and business features of the subject.

This book is written from the standpoint of the professional appraiser. It contains a review of the meaning and scope of valuation in the oil business, the factors which enter into a valuation, and methods of applying them. Questions which arise in valuation practice and the avenues of solution are discussed . . . for example, the different types of taxes, interest and royalties on lands, and means of appraisal of prospective oil lands. Included also are the tables which are required, as well as illustrated work sheets, costs data, and a record of the taxes imposed in every state where oil is produced, Canada as well.

The book will be of value and interest not only to the petroleum engineer and geologist, but to the tax accountant, investment counselor, and the student of petroleum engineering—to anyone whose career is involved in oil properties, and who wants to know more about its valuation.

*Paul Paine began working in the oil fields in 1908, after graduating from the Massachusetts Institute of Technology. He became superintendent of Honolulu Oil Company at Taft, in 1917 left there to join the staff of Gypsy Oil Company in the Mid-Continent. Like most Californians who go east he found that he had a return ticket in his pocket and eventually he came back to the West Coast, where since 1922 he has operated independently except for terms on the board of Union Oil Company and as vice president of Shell Company. He is one of the owners of Formax Oil Company, is a director in Kern County Land Company, and his independent engineering practice is occupied chiefly with the valuation of oil properties and of oil companies.

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The Olympiat Transit Co. received the following letter a few days ago from a rider living on the outskirts of the city.

Olympiat Transit Co.

Gentlemen:

I have been riding your busses for the last 10 years and the service seems to be worse every day. In fact, I think the transportation you offer is not as good as that enjoyed by the people of a thousand years ago.

Very truly yours,
BILL GLUCK.

The company replied as follows:

Bill Gluck,
City,
Dear Sir:

We have received your letter of recent date and believe that you are somewhat confused in your history; the only transportation offered the public a thousand years ago, was traveling on foot.

Yours,
Olympiat Transit Co.

The commuter then wrote:

Am in receipt of yours and think you are the one that is confused in your history. If you will read the Bible, you will find that Aaron rode into town on his ass more than a thousand years ago and that is something that I have been unable to do on your busses in the past 10 years.

Bill Gluck.

A beautiful young girl went bathing in a secluded pool in the woods. She emerged from the pool and was sunning herself on the bank, when she heard a rustling in the bushes nearby.

"Who's there?" she called.

"Willie", answered a high pitched voice.

"How old are you, Willie?"

"Eighty-nine, dagnab it!"

First Chorine: "When the manager gave me that feather I just laughed and laughed."

Second Chorine: "Prudish, eh?"

First Chorine: "No, ticklish."

Captain: "Honey, how do you like my company?"

That blonde: "Swell, every one of them."

"I should say not. It's against my principles."

"Forget the principle, baby. How about a little interest?"

First Co-ed: Jimmy is grand but I think all men are trying sometimes.

Second Co-ed: All the time, dearie, all the time.

A colored woman went into a doctor's office for medical advice. The doctor asked her if she had ever been X-rayed.

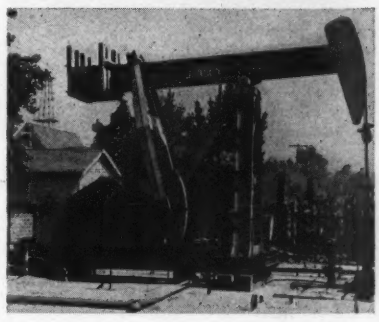
The woman replied: "I don't know about that, doctor, but I'se been ultra-violated."

The tired core driller plodded wearily home. A hard day in the field. His last good tire had blown out. Arriving home, no odor of supper cooking. All quiet. A farewell note on the table from his wife. Then the phone rang and a neighbor informed him that his only daughter had run away with a sailor. "The last straw," he thought. "A shot would end it all." So he opened a bottle and took one.

Three blood transfusions were necessary to save the life of the patient. A brawney young Scotchman offered his blood. The patient paid him $50 for the first pint, $25 for the second pint—but after the third pint, she had so much Scotch blood in her she just gave him a letter of recommendation.

"But, judge," protested the convicted and sentenced murderer. "I'm in poor health. I can't do a 99-year sentence."

"Well," said the judge kindly, "just do what you can of it."



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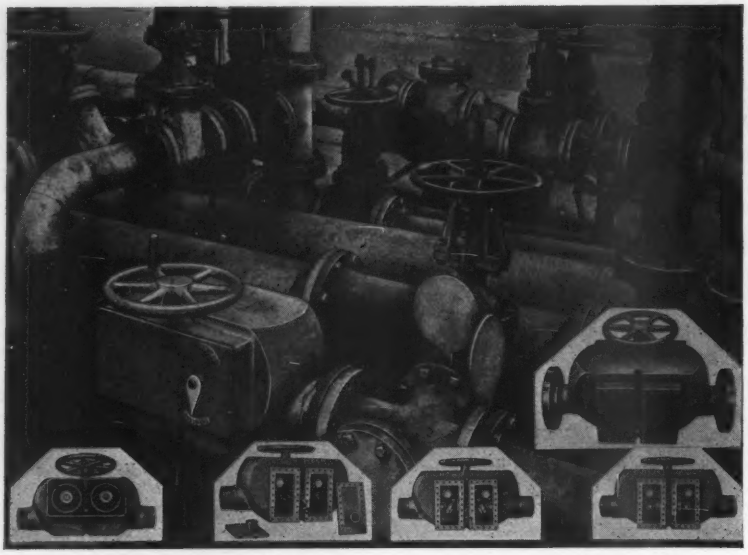


Hamer Partition valve in service in a refinery manifold.
Insets show internal working parts.

Double Seal Partition Valve

This new valve is designed to effect a permanent, positive shut-off under pressure with one-man operation, replacing the customary two gate valves with slip blank blind between them used in refineries, gasoline plants, and other pipe line applications.

The Hamer Double Seal Partition Valve consists of a single body containing two opposed valve members which close against seats situated in a central partition. Both valve members are synchronized and raised or seated simultaneously through powerful worm gearing operating by a single hand wheel. The operating gears are sealed in a compartment separated from the valve chamber and are packed in grease. The powerful gearing permits quick easy opening of the valve under pressure and also insures tight contact of the valves and seats when closed. An external indicator shows whether the valve is open or closed. A small bleeder drains the space in the partition between the valve seats to provide a positive check of the shut-off when the valve is closed.

Advantages claimed for the Double Seal Partition Valve are: That it can be installed in existing hook-ups, releasing the two gate valves and slip blank for service elsewhere; that in new installations, this single unit streamlines the manifold, conserving space and reducing the amount of new equipment needed. In both cases, this valve eliminates all time and labor required in blinding lines and avoids the waste and fire hazards caused by spilling fluid. Maintenance costs and line shut down time are reduced to the minimum, and shop repair is eliminated, because new valve members and seats can be installed quickly and cheaply while the Partition Valve is in the line. The valve members are designed for a double sealing action, having both metal-to-metal contact with the ground surfaces of the seats, and neoprene squeeze-tight pressure seals. The valve members swing to the away from the seats, eliminating "wire-draw" heretofore so damaging to valves.

As this valve is operated by one hand wheel which closes both valve members equally and at the same time, the possibility of one valve being left partly open is avoided.

The fluid passage through the Hamer Partition Valve is a straight-through, oversize round opening, providing sufficient clearance for all line-cleaning devices such as spinners, scrapers, swabs, etc. The valve may be used in any position desired, can be operated by remote control such as extension rods or electric motor, and can be used at temperatures from below zero to as high as 850 degrees F.

Columbia Steel Co. Announces Promotions

Appointment of S. G. Sargis as Assistant Manager of Industrial Relations was announced today by Columbia Steel Company, subsidiary of United States Steel Corporation. Sargis, who replaces C. T. Spivey, recently transferred to the Company's Utah operations, was first employed by Columbia Steel Company as a Draftsman in 1933 at its Ironton, Utah plant. In 1934, he entered the Coke Department as Engineer and Clerk and served as Testing Engineer, Industrial Engineer and Works Industrial Engineer, until 1941 when he was transferred to the Company's Torrance, California plant as Works Industrial Engineer. Shortly thereafter, he was promoted to Supervisor of Industrial Relations, which position he has held until his present appointment.

Sargis is a native of Persia and was educated in this country. He served in the United States Army during the last war and in 1925 graduated from the University of Wisconsin, with a Bachelor of Science Degree.

He will be succeeded at Torrance Plant by J. H. Clark, Jr., Assistant to the Supervisor of Industrial Relations at Pittsburgh Plant of Columbia Steel Company. Clark is a native of Cambridge, Massachusetts and is a graduate of Stanford University, having received his Bachelor of Arts Degree in 1938. He joined Columbia Steel Company shortly after graduating, as a Junior Industrial Engineer. In 1939, he was promoted to Assistant Industrial Engineer and in the same year joined the Industrial Relations Department as Practice Supervisor. In March of this year, he was promoted to the position of Assistant to the Supervisor of Industrial Relations.

Columbia Steel Makes New Production Records

Continuing its all-out war effort, Columbia Steel Company, U. S. Steel Corporation subsidiary, announced recently the establishing of several new steel production records.

At the company's Pittsburg, Calif., works, the production of electric furnace steel showed an increase for the fourth consecutive month in August. During that month, production of this steel was stepped up 5.6%. Production of straight and cut products was also up 12.6% during this month, allowing for a heavy increase in welding wire for West Coast shipyards. Similarly, the production of rods showed an increase of 1.3% for the month, which will mean a greater increase in wire and nail products.

At the company's Torrance, Calif., plant, foundry castings for government work were increased in August by 7.2%. The company also announced that since December 7 the total of 116 production records had been broken in both plants.

U. S. Petroleum Statistics, August

California Oil and Gas Association index numbers for the United States for July 1942 show production items slightly lower than in June 1942. The index number for crude oil production dropped from 145.03 to 144.47, and total domestic production from 145.99 to 145.50. The index number for total stocks in July was 79.44, compared with 80.58 in July. The index number for total motor fuel production was up from 137.11 in June to 142.86 in July.

For the first seven months of 1942 crude oil production in the United States was 0.86 per cent greater than for the same period of last year, natural gasoline production was 36.53 per cent greater, and total domestic production was 2.19 per cent greater. Total stocks on the last day of July 1942 were 7.23 per cent less than on the corresponding day a year ago. For the seven month period total crude run to stills was 3.26 per cent less than for the same period of 1941 and total motor fuel production was 6.98 per cent less. Wells completed producing were less by 41.36 per cent, wells completed gas were less by 20.19 per cent, and wells completed dry were 15.14 per cent smaller. On the last day of July there were 2,386 wells drilling, 43.86 per cent less than on the same day a year ago.

ODT Certificates Will Provide Tire Inventory

Applying for a Certificate of War Necessity under ODT Order No. 21, every operator must report the number and condition of all tires in his possession by sizes or size groups. Data supplied on the applications will provide the Office of Defense Transportation with a complete inventory of all tires now on the wheels of the country's more than 5,000,000 non-military commercial vehicles or held for the use of such vehicles.

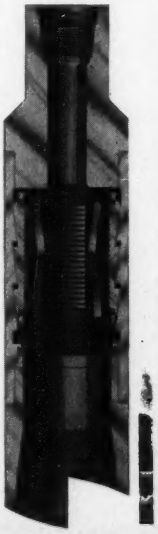
NO. 5 HOW BOWEN TOOLS CONSERVE COSTLY WELL EQUIPMENT

TIME-SAVING BOWEN SOCKET
REDUCES FISHING FAILURES

Time lost while a twistoff bogs down tighter and tighter in the hole can mean the difference between a fish on the floor and a fish left in the hole. **So to save valuable time on jobs today, have the Bowen Releasing Socket handy on your rig for an emergency.**

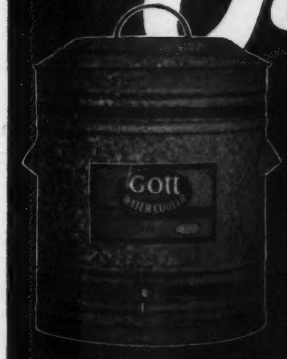
With this tool you can make up on the fish quickly and easily even under tight hole conditions and be on your way out—**in a hurry.** No complicated mechanisms to break or fail to function . . . no tricky operations to perform. The Bowen Socket stands heaviest jarring loads, repeated setting and releasing, and strongest torque strains when left-handing.

Made in all sizes and two types, in single and double bowl assemblies and with packing assembly for circulating if desired. Stocked by your nearest Bowen Service Stores, which is open 24 hours a day for your convenience. . . . . .



BOWEN FISHING TOOL CO.
SANTA FE SPRINGS, CALIFORNIA
SERVICE WAREHOUSES: VENTURA · SANTA MARIA · CASPER, WYOMING

Gotkool
WATER CANS & COOLERS



GOTKOOL WATER COOLER
Made in 2, 3, 5, 8, 10, 15 and 20 gallon sizes.

GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today!

H. P. GOTT MFG. CO.
WINFIELD, KANSAS

KEEP PURE DRINKING WATER ALWAYS HANDY

Oil and Insulation Testing Set

An improved 35,000-volt oil and insulation testing set, which can be converted for high-potential tests on a variety of materials and products, is announced by the Transformer Division of the General Electric Company.

The set consists of a 2-kva, 35,000-volt, liquid-immersed testing transformer; an air-cooled variable-voltage autotransformer; an air circuit breaker for opening the circuit after the test is completed, an oil-testing receptacle; a push-button station; and a double-range voltmeter for accurate indication of the insulation breakdown voltage. All these parts are mounted as a unit on a three-wheel, ball-bearing truck for easy portability.

The oil-testing receptacle contains the test gap and is so mounted on the high-voltage terminals that simply tilting the receptacle empties the tested oil into a drain pan in the transformer cover. The oil is then withdrawn from the pan through a drain cock. The receptacle is suitable for testing Pyranol* and other askarels, as well as oil.

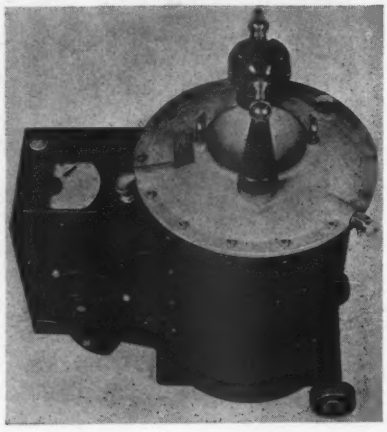
The oil-testing receptacle is easily removed to convert the set for standard high-potential tests on such materials and equipment as sheet insulation, cable, small transformers, rubber gloves, small motors and generators, circuit breakers, line materials, bushings, and insulators.

Positive control of the testing set is assured through the use of the push-button which must be depressed and held down throughout the test. A red signal lamp warns the operator when the transformer is energized. A variable-voltage autotransformer provides for easy control of the output voltage. The auto-transformer handle is equipped with a graduated dial for approximate indication of the test voltage if the sample being tested breaks down before the voltage is read.

The testing set is finished with high-quality, black crackle enamel, and is provided with a 15-foot flexible cord and a plug for connection to any convenient 115-volt or 230-volt a-c outlet.

Bulletin GEA-2732A can be secured on request from the General Electric Company, Schenectady.

*Registered U. S. Patent Office.



G-E 35,000-volt testing set, Cat. 79x336, used in making dielectric tests on insulating liquids, etc. Oblique top view showing voltmeter, circuit breaker, control switch, high-voltage terminals, oil testing receptacle, and drain cock.

Mortimer Kline Now with O.P.C.

Mortimer Kline, independent Los Angeles oil attorney, has been named associate chief counsel in the Office of Petroleum Coordinator for War, Deputy Coordinator Ralph K. Davies announced on October 5.

Mr. Kline comes to OPC with 15 years of general legal practice which included experience in all phases of the petroleum industry. Probably he is best known in oil circles for his work in a series of cases which halted the practice of crooked hole oil drilling.

Mr. Kline is a graduate of Stanford University (1921), and completed his legal education at the University of Southern California. From 1922 to 1925 Mr. Kline was deputy district attorney for Los Angeles County and deputy county counsel from 1925 to 1927. He has upon several occasions acted as judge pro tem on petroleum matters in the Los Angeles Superior Court.

He formerly was a member of the firm of Andrews & Kline in Los Angeles, but within recent years has maintained his own law firm. Among the many independent oil groups which he has represented are Kern Oil Co., the British American Oil & Petroleum Co., Ltd., Hancock Oil Co., Bell & Loffland, Inc., and Ventura Land & Water Co.

BUY

DEFENSE

BONDS

BJ Offers New Casing Pump Anchor

The increasing use of casing pumps is responsible for this successful, new device for safely anchoring of such pumps and for prompt release when it is necessary to remove them from the well.

The large-area slips have diagonal-cut teeth and the hazard of damage to the casing is minimized. The body is welded to the tubing nipple which is free to move through the anchor cage a sufficient distance to get the slips when the following easy method is used:

Casing pumps usually are run in the well on the sucker rods, with the BJ Casing Pump Anchor coupled to the lower end of the pump. The Anchor Cage is equipped with friction shoes which contact the casing, and when the desired depth has been reached the rod string is raised until the key on the nipple comes out of the pocket in the Anchor Cage. Rotation to the right brings this key over its keyway and then by lowering the string the anchor holds the actuator and slips and the entire body expands the slips and sets them against the casing.

Detailed information as to sizes and prices obtainable from Byron Jackson Co., Houston, Los Angeles, or New York.

Ideal Blackout Factory Envisioned

George H. A. Parkman, Westinghouse construction expert, advances a recipe for the idea war factory — a blackout, bomb-resistant, windowless building from which vital military machines and armaments would flow 24 hours a day, uninterrupted by air raids or sabotage.

Drawing on ingenious American technical achievements of the past decade, Mr. Parkman advocates the use of artificial daylight and precisely regulated temperature and humidity inside the arch-roofed superfactory to raise to a maximum the efficiency of men and machines.

A modern "failure-proof" system of factory power supply designed to localize damage from bombing, sabotage and other causes, would assure an unbroken flow of electricity to lathes, drills, welding sets and other equipment used to shape machines of war.

Cleanest Air

Two recent inventions would supply the cleanest air modern science can produce, protecting the health of workmen and guarding delicate machine parts against scratching. One of these, an electric air cleaner called the Precipitron, would bar the entrance of air-borne dirt, dust and smoke. The other, the Sterilamp, would stand guard in air ducts, killing bacteria with its invisible ultraviolet rays.

"Although this blackout superfactory would be adequate for the manufacture of almost any type of war equipment, its advantages are so great they would carry over into peacetime factory construction, inaugurating a new era in improved industrial working conditions," said Mr. Parkman, who is director of building construction and maintenance for the Westinghouse Electric & Manufacturing Company.

"Many of these engineering advances have already been incorporated in factories constructed in the past year, but as far as I know no factory has yet been built to take full advantage of all these recent developments," he added. "Increased comfort of workmen and protection of health in such a factory would improve morale, and speed production by reducing lost time due to illness.

This scenic inside the air-conditioning duct of a large chemical plant shows a workman installing Sterilamps. Ultraviolet light from the lamps will kill 95 per cent of the bacteria in the air passing through the duct, thus purifying the air workers breathe and lessen the possibility of contaminating products.

"Our lamp research engineers have found that ninety-five per cent of air-borne disease germs in air entering a factory can be killed by the ultraviolet light from Sterilamps. It is believed that such cleaning of factory air reduces a worker's danger of contracting communicable diseases."

Sterilamps are glass tubes, about two feet long and a half an inch in diameter, which give off a pale blue glow and an abundance of invisible ultraviolet light. They are stood in rows across the air ducts. About 100 are required for every 10,000 cubic feet of air a minute supplied to a factory. Six hundred have been installed in the air conditioning ducts of Westinghouse's new $3,000,000 fluorescent lamp plant in Fairmont, W. Va.

OPC Amends Recommendation on Service Stations

Office of Petroleum Coordinator has amended Recommendation No. 30 to provide that property owners, as well as service station operators, should be notified whenever suppliers intend to remove equipment from premises, so that property owners may have a chance to buy the equipment.

Oil Industry Hearing

A hearing on the petroleum industry started in Washington on October 5, before a subcommittee, of which Senator Joseph C. O'Mahoney is chairman of the Senate Committee on Public Lands. Representatives of the OPC, OPA, the War and Navy Departments and other Federal agencies having to do with the oil industry were invited to attend, as well as representatives of the industry itself.

In referring to the hearings Senator O'Mahoney said:

"It is proposed to adopt the same procedure which was followed at the hearing on July 17, and representatives of all of the agencies which have authority over petroleum will be invited to sit down together and discuss the facts already developed and new facts which it is hoped to present at this time.

DON B. GRABLE

Don B. Grable, formerly with Baash-Ross Tool Company, Globe Oil Tools Company and Baker Oil Tools, Inc. in Bolivia, Brazil and the Argentine, is now employed by the Kern Drilling Company of Long Beach, Calif., operating a rig on Terminal Island for the Long Beach Oil Development Company.

Engineering, Technology, latest news—twice a month in California Oil World.

Chain Belt Given Army-Navy "E"

"The men and women of Chain Belt Company are making an outstanding contribution to victory. Their practical patriotism stands as an example to all Americans, and they have reason to be proud of the record they have set."

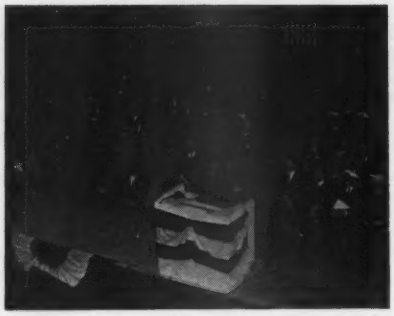
So wrote Robert P. Patterson, Under Secretary of War, in notifying the employees and management of Chain Belt Company that they would receive the Army-Navy "E" Production Award.

Letter From Winston Churchill After Last World War

On September 19th amid a colorful setting of many flags and in the presence of over 4,000 employees and their families the presentation of the award was made. J. C. Merwin, President of the Company, in an address of welcome read a letter from Winston Churchill written after the first World War expressing the appreciation of the British government for the cooperation the Chain Belt Co. gave them toward winning that war. His words were somewhat similar to those of Robert Patterson above. He said, "I desire personally to thank you and your staff for the help which you have rendered, and to express my appreciation of the fact that the enthusiasm and interest which was exercised was something more than ordinary commercial considerations could demand."

Army and Navy Officers On Program

Brig. Gen. A. G. Gillespie, Commandant of the Watervliet Arsenal, New York, spoke briefly at the ceremonies on the significance of the award. Lt. Col. D. J. Martin, Chief of the Cannon and Aircraft Armament Section, Artillery Division, Office of the Chief of Ordnance, War Department, Washington, D. C., made the presentation of the Army-Navy "E" burgee to J. E. Brown, Vice-President of the Company, who accepted it for the Company. Capt. D. D. Dupre, Commandant of the Naval ROTC at Marquette University, presented token Army-Navy lapel insignias to a number of employees. Daniel M. Mackie, veteran employee, accepted for the employees of the Company. Hon. Julius P. Heil, Governor of Wisconsin, made the closing remarks.



Presenting the Army-Navy E. Production Award to Chain Belt Company.

Company Over Fifty Years Old

Chain Belt Company last year celebrated its fiftieth anniversary. It is one of the largest manufacturers of chain belts and power transmission machinery, conveyors of all types, sanitation equipment and construction machinery. Quite recently, the operations of the Company were expanded to include those of the Baldwin-Duckworth Chain Corp. of Springfield and Worcester, Mass. Among some of the Company's outstanding achievements are the use of its belt conveyor idlers in the 9.6 mile belt conveyor at Shasta Dam, the longest conveyor in the world; and the use of its concrete pump (the REX Pumpcrete) in the construction of such tremendous projects as the Delaware River Aqueduct, San Francisco-Oakland Bay Bridge, Colorado River Aqueduct, etc.

Meter Association Program For October Meeting

Mr. William Henderson, Superintendent of Distribution of the Southern California Gas Company, Los Angeles, will speak at the October 15th meeting of the Southern California Meter Association at the Rio Hondo Country Club. His subject will be "Defense Against Air Raids". Mr. Henderson will endeavor to describe the means and equipment available for controlling escaping gas and extinguishing fires resulting to gas mains from damage by air raids.

Mr. Virgil E. Schultz, Branch Manager of the Foxboro Company, will supplement the program with a practical talk entitled "Automatic Controllers — Their Fundamental Design and Application". Mr. Schultz will explain and discuss the three types of controllers known as On-Off, Throttling and Automatic Reset, and on how to select and properly apply each one for the particular work for which it is designed.

General Electric Pays Employees Over $63,000 for Suggestions For First Half 1942

More than $63,000 has been paid since January 1 to employees of the General Electric Company as a whole for suggestions adopted to speed war production, according to Mr. Raymond M. Alvord, General Electric's commercial vice-president in San Francisco.

During this period, 7500 of approximately 25,000 submitted suggestions were adopted by the Company, Mr. Alvord revealed.

Among recent outstanding employee suggestions was one relating to an improvement to a particular type transmitter part, several of which are used in highly complex aviation equipment. This suggestion earned $350 for its originator, Miss Laura Garrison, who instructs new employees in a G-E plant.

Another suggestion was an improvement in assembling of radio equipment for the Army and Navy. This suggestion was offered by John Vos, employed in a G-E radio testing department, who was awarded $400.

Other recent suggestions include a simpler method of assembling control equipment for Naval craft, means of conserving scarce materials in transmitter construction, an important tooling change on a lathe, and a quicker and better method for machining submarine parts.